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ABSTRACT

This report provides information on the background, methodology, and findings of the Videodisc-Microcomputer (ViM) Network project, which brought together over 40 schools in 15 states to explore the potential of a new technology for basic skills instruction. Initiated in 1981 and completed at the end of 1983, the project involved a wide variety of activities, ranging from software development and documentation to equipment acquisition and repair, including on-site and telephone consultations and problem-solving for participating schools, and the production of a series of newsletters and a descriptive network directory. Background material provides descriptions of interactive videodisc technology, electronic mail technology, and innovations in the schools. Site selection, overviews of support activities for interactive videodisc and electronic mail, and observations are included in the section on methodology, and the findings are reported under four broad headings: (1) Availability and Durability of Hardware; (2) Availability and Usability of Videodiscs; (3) Needs, Skills, and Time of School Staff; and (4) Communication via Electronic Networks. Eight appendices make up the major part of the report: (1) Participants in the ViM Network; (2) Sample of the ViM Network Newsletter; (3) ViM Network Directory; (4) Reprint of Articles from Videodisc News; (5) Instructions for ViM-SCRIPT; (6) Example of a ViM Script; (7) Classroom Teacher's Courseware Assessment Form; and (8) Videodisc-Microcomputer Usage Log. Eight references are also provided. (RP)

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COORDINATION AND EVALUATION OF VIDEODISC AND MICROCOMPUTER PROGRAMS

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FINAL TECHNICAL REPORT

Donald H. McLaughlin
Robert J. Rossi
Thomas W. Bakke
Dorothy F. Reynolds
Barbara L. Ueltschi

Prepared for

DIVISION OF EDUCATIONAL TECHNOLOGY

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The Videodisc-Microcomputer (ViM) Network project, initiated in 1981 and completed at the end of 1983, was designed by the Division of Educational Technology, U.S. Department of Education, and brought together over forty schools in fifteen states to explore the potential of a new technology for basic skills instruction. The authors wish to thank both Frank Withrow and Sheldon Fisher, of the Division of Educational Technology, for their thoughtful guidance in the conduct of the project. We also wish to thank the participants at the network schools, listed in Appendix A, for their voluntary efforts to work with others in breaking new ground in the exploration of interactive videodisc technology.

The operation of the ViM Network also included a wide variety of activities on the part of the American Institutes for Research (AIR), ranging from software development and documentation to equipment acquisition and repair, including on-site and telephone consultation and problem-solving for participating schools, along with production of a series of newsletters, a descriptive network directory, and reports of the activities of the network. Particularly important were Jenelle Leonard's excellent work with the Washington metropolitan area schools, David Rubin's creative development of resources and technical assistance to schools, and Darlene Russ-Eft's newsletters, lesson script development, and other on-line information resources. Many others contributed valuable efforts at various points in the project, especially Dan Felker, Susanne Horvath, Stan Sibley, Pat Spurr, Leslie Truitt, and Winnie Young. To all of the participants in the ViM project, we extend our sincere thanks for their resourceful efforts to deal with the varied problem-solving situations that arose with persistent regularity.

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BACKGROUND

Can interactive videodiscs enhance the teaching of basic skills to children? Can electronic mail help school staff to use innovations in basic skills instruction? In 1981, the Division of Educational Technology, in the U.S. Department of Education, funded projects to explore the potential impact of newly emerging technologies on basic skills instruction. One of these, a network of schools called the ViM (Videodisc-Microcomputer) Network, was to explore the potential contributions of interactive videodisc systems and of electronic mail to school performance. By supporting use of new technologies and by observing methods used to overcome barriers to their use, the Division of Educational Technology aims to provide valuable information to educators looking for technological solutions to problems of basic skills instruction.

The ViM Network project is but one step in the continuing exploration of (1) applications of interactive videodisc systems, (2) applications of electronic mail, and (3) introduction of technological innovations into the schools. As a background for the description of the ViM Network, we first briefly describe the nature of the two technologies, then summarize the literature on the introduction of change into schools. We then describe the many support activities undertaken by the Division of Educational Technology's contractor, the American Institutes for Research (AIR). We conclude with a description of the findings of the study, an evaluation of the potential of the technologies studied, and recommendations for the future.

Interactive Videodisc Technology

The ability of a teacher to pick up quickly on children's ideas and respond creatively and adaptively to them differentiates expert instruction from the dull and commonplace. Such a teacher creates a richly interactive learning situation, and the results are exciting for both teacher and student. However, it is very difficult for an individual teacher to respond quickly to each student with appropriate feedback that contains images evoking further exploration by the student, and it is impossible for an individual teacher to respond in such a fashion when confronted with an entire classroom of students. That kind of teacher-student interaction has been beyond the capability of current educational programs, and approximations to it are considered examples of exceptional teaching.

The advent of low cost computing, however, promises to make this kind of interaction feasible. Computers can analyze students' responses extremely quickly and immediately present pre-programmed feedback and extensions that are appropriate for each individual student. There are two important limitations on computers, however. Responses must be in a mode that computers can quickly analyze, at present usually multiple-choice items; and the feedback must either be derived from formula or stored in some form accessible to the computer. For computers to realize their full potential as tools for education, they must be coupled with devices that push back the current limits on response analysis and increase the size of immediately accessible feedback image storage.

The ViM Network focuses on the feedback image storage problem and examines one approach to solving it. There are a variety of media currently available for storage of information in a form accessible to microcomputers, most notably magnetic tape (including videotape), magnetic disks (floppy disks and hard disks), rotating drums, and videodiscs. They differ from each other in (1) density of storage, (2) ease of storage, and (3) ease of retrieval.

Of these media, the laser videodisc offers perhaps the most exciting option for storage of massive amounts of immediately accessible information. A videodisc player reads information from a rapidly spinning disc by measuring the reflection of a laser beam from its surface. Each revolution of the disc, in one thirtieth of a second, retrieves the information needed to present an entire television picture. It offers unparalleled density of storage and quick scanning to an exact location anywhere on the surface of a disc. By coupling a videodisc player to a microcomputer, the analysis of a response can be followed by presentation of any of 54,000 "frames" of information, either individually or in a motion sequence. Videodiscs offer a means for surmounting the barriers that software designers encounter in dealing with large numbers of different topics or items. For example, videodiscs can store entire vocabularies of common words in foreign languages, full color renderings of entire collections in museums full of art objects or species categorizations, and extremely rich and detailed images of places, occupations, or skills to be learned. Indeed, as Richard Scudder wrote in 1981, the storage capacity of the videodisc must compel us to develop and master the techniques to manage this new technology for both instructional and recreational purposes. (p.16).

While the potential for this technology is alive in the imaginations of today's educational technologists, there have been few actual installations of the technology or observations of its effectiveness for basic skills training. Introduced more than a decade ago, the development of laser videodisc technology has met with varying levels of enthusiasm as problems were uncovered. One major producer of videodisc players retreated from the market in 1982, and attempts to create a mass market for home video discs have so far failed. The major successes have been in military and industrial training, where the value gained from effective and efficient training is most apparent. In education, use of the videodisc seems to conform rather well to the "case for technological gradualism" made by Robert Holloway (1982). The appropriate use of interactive videodisc systems for basic skills instruction is and has proven to be quite complex, and the interface between this technology and operations in the schools of today is even more complex. Many more questions need to be answered before we will realize the full potential of the technology.

The questions concerning the practical application of interactive videodisc technology for basic skills instruction fall into four categories:

(1) Is existing hardware sufficiently cost-effective to warrant schools' investment in creating the capacity to use the technology?

(2) Do existing laser videodiscs provide a sufficient base of instructional material to warrant the investment?

(3) How should videodiscs be designed to maximize their potential for interactive instructional uses?

(4) What are the barriers to infusion of the technology into school settings, and how can they be overcome?

Although existing hardware and videodiscs can be evaluated in the abstract, the practical answers to these questions, which are important for schools planning for technological improvements to basic skills instructional programs, require the actual demonstration and evaluation of the technology in school settings.

One method for promoting the exploration of this technology is to foster communications among schools who are attempting to use it, and accordingly the ViM electronic mail network was set up to facilitate communication and exchange of materials. This system built on the same microcomputers used at participating schools to control videodisc presentations, and at the same time the project addressed questions about videodiscs, it also enabled us to consider questions about the value of electronic mail for schools.

Electronic Mail Technology

While school staff and other professional workers continue to communicate in traditional forms, a new kind of communication system is gradually being added to existing postal, telephone, radio, and television capabilities. This is electronic mail, transmission of documents containing messages from one person (or "user") to another by storing them in a computer system to which both have access. It can be viewed as a hybrid between traditional mail and telephone systems, with the typewriter and television screens thrown in.

An electronic mail system consists of (1) a central computer system, (2) a communications system, and (3) a mechanism by which users can gain access to the communications system. The central computer system provides for storage and routing of messages between users and can prompt users as to what responses to type and then interpret those responses. The central computer is interfaced (that is, connected) to a communications system which conveys interpretable electronic signals between different locations. (Think of communications systems as the telephone company and its various competitors.) The mechanism by which users gain access to the communications system is a combination of a "telephone" and a device by which users' messages can be translated into digital signals for transmission through the telephone. This device is, itself, commonly a combination of (1) a terminal (or a computer acting as a "smart" terminal) with a keyboard and video screen and (2) a modulator-demodulator ("modem") that creates standard tone sequences corresponding to characters entered at the terminal.

The central computer's storage is configured so that each user has a "mailbox," where messages to him or her are stored. Upon connecting to the system, the user is notified of the presence of mail in the mailbox, and based on the person's choice, the computer will list the mail on the video screen or store it for later retrieval. One can send mail through the system by entering the message into the computer's main storage and then specifying into whose mailbox(es) the message is to be stored.

Electronic mail has a variety of advantages over alternative communication media:

(1) no need for both parties to be simultaneously located at their telephones;

(2) immediacy of transmission, and storage of transmitted information in a retrieval system;

(3) capability for simultaneous transmission of a message to many receivers with minimal additional cost;

(4) capability of transmitting "lead-ins" that allow receivers to select information they wish expanded into greater detail; and

(5) capability for transmission of information in forms required by computers, including software for microcomputers.

The central computer systems involved in electronic mail commonly include adjunct capabilities that add to the simple communication facility. These include bulletin boards, where users place messages to be read by other users at their leisure, information resources, such as lists of meetings, journals, and available software, and text editing programs, which support users' refinement of messages to be sent using electronic mail.

Electronic mail does not include, however, all the uses that can be made of computers, and access to an electronic mail system should not be viewed as equivalent to access to large scale computing. In particular, electronic mail is not the same as an electronic data base system, containing information resources that can be retrieved by connecting a terminal to a network. Many mainframe computer users, in fact, perform their programming tasks by accessing the computer via remote terminals, without using the computer for electronic mail communication with other users; and many electronic information retrieval services exist purely for the purpose of providing data bases of information to paying users. Electronic mail, on the other hand, aims primarily to facilitate one-to-one, one-to-many, or many-to-one conversations between a network of users.

The number of electronic mail networks in the U.S. has grown during the past ten years, with business, industries, and the military all seeking to embellish their stock of communication tools. Projections made recently indicate that these networks will become even more commonplace in the near future, as they will provide one of the major avenues for users of home computers to expand the boundaries of their knowledge of computing and of their base of software. Nevertheless, the average frequency of usage of these systems is quite variable, and the cost-effectiveness of electronic mail has so far been dependent on the setting, medium, and purposes for which it is used. Cornelius Sullivan (1983), for example, points out that to many businesses electronic mail has so far been a disappointment, failing to handle company communication needs more effectively than the mail or the telephone used alone. His argument is that this technology is especially well-suited to information-intensive activities, where the need to communicate is constant or where thoughtful queries and considered replies are the rule. By more carefully identifying these types and settings and encouraging the use of new technology, he suggests that electronic mail systems can be put to more effective use, with greater rewards for managers and staff.

In accord with these sentiments, the value of electronic mail does seem to be greatest for individuals who are working jointly on shared tasks and who need to transmit information in the form of documents that can be retrieved. For others, the cost-effectiveness of electronic mail must be carefully considered. The costs include not only the tangible cost of the resources involved in the three subsystems (the central computer, the communications system, and the user's hardware and software) but also intangibles such as the following:

(1) learning the procedures needed to gain access to the electronic mail system and make use of its operations;

(2) learning to read and process information presented in the form of CRT screens-ful, or acquiring the equipment necessary to print the information on paper;

(3) learning to adapt to variability in computer service (sluggish response in peak load, downtime, and changing rules); and

(4) learning to type.

The questions addressed by the VIM project concerning electronic mail relate to the feasibility of use by school personnel, the value of the system for teachers, particular ways in which the system is valuable, and particular barriers that deter use of the system. Teachers in schools across the country have very full work schedules, often they are working virtually "alone with their own classroom," and they must address many competing objectives for improving the instruction they provide for children. Does electronic mail offer for them, as contrasted with Sullivan's corporate and product managers all working toward a similar goal, sufficient value to warrant the fostering of large scale networks? This type of question is not different in kind from those that have been asked about other educational innovations.

Innovations in the Schools

Federal leadership in introducing the schools of America to new technologies that might improve the education of our children has a long history. The federal role grew dramatically in the 1960s; and at the end of that decade many began to question the assumptions on which federal funding of innovations was based. Numerous studies of the infusion process were undertaken, most notably the Rand "Change Agent Study" (Berman et al., 1974).

A variety of models have been developed to describe the complex processes that comprise systems for improving education. Elmore (1978) described four such models, based on organization theory: a Systems Management Model, a Bureaucratic Process Model, an Organizational Development Model, and a Conflict and Bargaining Model. Havelock (1973) described four additional models with more specific applications to educational innovation: a Problem-Solving Model, a Social Interaction Model, a Research, Development, and Diffusion Model, and a Linkage Model. The variety of models serves to suggest the complexity of problems facing any project that aims to demonstrate and evaluate the potential of a new technology for use in American schools.

From the Rand study, researchers reached the conclusion that "durable change depended on:

- concrete, specific, extended teacher training,
- classroom assistance from local, on-call district or project staff who could give timely, relevant, and practical advice,
- the chance to discuss problems likely to be encountered and how to solve them with teachers who had carried out the innovation successfully,
- regular project meetings,
- teacher participation in project decisions,
- local development or modification of materials, and
- a proposal originating in a locally perceived need rather than a proposal that was merely opportunistic responding to the availability of federal dollars" (Datta, 1981, p.16).

In addition to these factors, the timing of the project is often critical to the success of an implementation. Innovation does not proceed successfully on a set time schedule, and infusion of methods must be expected to be gradual. Furthermore, clarity of objectives and expectations and an understanding of inputs, outputs, and underlying theory are essential for successful innovation. Emrick and Peterson (1978) provide a list of guidelines for effective dissemination/utilization programs:

- Identify and gain access to targets by means of the personal referral networks and informal communication channels existing within a client's social system.
- Use in-person (preferably face-to-face) communications accompanying hard copy.
- Target the primary point of entry at the organizational level most proximate to the intended locus of impact, i.e., information intended for teachers should be targeted to teachers, not to administrators.
- Provide for and secure prior informed concurrence of all administrative levels above the level of primary interface.
- Make use of change agents, interventionists, linkers, facilitators, intermediaries, and advocates who are most "homophilous with the target subculture."
- Ensure that all transactions between an intermediary and the client are coherent and coordinated with general goals of the dissemination program.
- Provide opportunities for choice in the content and style of target group involvement.
- Focus on a limited number of clients. Overcommitment of intermediaries or overly ambitionus dissemination programs are a common and serious strategic error.
- Place early emphasis on the philosophy and ideology of the information, products, or services being disseminated. This helps to arouse enthusiasm and motivation.
- Make early use of concrete experiences, assignments, materials, and utilization-relevant activities. Initial client involvement activities are crucial.
- Provide repeated in-person transactions with the client staff.
- Anticipate that utilizations will be gradual and cumulative.

These guidelines were developed in the 1970s, and many aspects of innovations are changing in the 1980s, especially with the introduction of microcomputers simultaneously into homes, businesses, and schools. Parents have taken new interest in introducing technology into schools, and teachers and students alike are both excited and somewhat intimidated by the new technology. Questions arise as to which of the earlier principles for fostering innovation in the schools are of less importance, and which are more crucial. For example, will the advent of electronic mail reduce any of the importance of on-site face-to-face communications? Will the use of microcomputers be subject to the same rules of bureaucratic control as other innovations, or will the broad parallel infusion into the homes alter the locus of control?

More specific to the present project are questions as to whether the electronic mail technology and the videodisc technology are sufficiently mature for widespread dissemination to schools, and whether the provision of services and equipment by the federal government will fit existing school needs sufficiently closely to foster adoption and utilization. The results of the ViM network demonstration will indicate areas in which the technologies need improvement for use in schools and areas in which school staff need further preparation for using this technology.

The contractor whom the Division of Educational Technology selected to implement the ViM network was the American Institutes for Research (AIR), a non-profit educational and behavioral research organization with a long history of technological development for education. AIR staff in Washington, D.C., and Palo Alto, California, developed a network of 45 schools in 18 states. In the next section, we describe the activities undertaken by AIR both to support the ViM Network and to draw conclusions from its operation.

METHODS

This 27-month project (1) identified a set of sites where the technologies of interactive videodisc and computer telecommunications might be used for basic skills instruction; (2) provided supplementary equipment and services to facilitate the use of these technologies; and (3) observed the performance and results.

The methods are described separately for the three phases: site selection, support, and observation. Site selection took place largely in the first four months of the project. At the same time, forms for data collection were prepared and submitted for OMB clearance, which they promptly received. Support and observation activities started in the fourth month and continued throughout the next twenty-three months.

Site Selection

Prior to the inception of this project, the U. S. Department of Education had already identified 16 sites in the Washington, D.C., metropolitan area for inclusion in the project. These schools had been participants in a previous federally supported study of technology in the schools, and all had been provided the requisite hardware for the ViM project. Twenty-nine other sites were added so that the ViM-Network would be broadly representative of the country. These schools were identified through four sources: (1) a catalog of schools using computers compiled by Harvard University in 1981, (2) referral by MECC, the Minnesota Educational Computing Consortium, (3) referral from requests received through the U. S. Department of Education, and (4) a variety of informal contacts and queries regarding the existence of schools with the prerequisite equipment.

To be selected for inclusion in the study, schools were required to make available a microcomputer with power equivalent to an Apple II with 48K memory and a laser videodisc player capable of being controlled by the computer.

Forty-five sites in eighteen states and the District of Columbia were selected to participate in the network during the first seven months of the project. There were 10 in Minnesota, 9 in the District of Columbia, 6 in Virginia, 3 in Maryland, 2 each in California, Florida, and New York, and 1 each in Connecticut, Illinois, Indiana, Louisiana, Michigan, North Dakota, Oklahoma, Oregon, Pennsylvania, Texas, and Utah. A listing of the schools that participated in ViM is contrained in Appendix A.

The equipment available at the 45 ViM sites is summarized in Table 1. As can be seen, the predominant computer was the Apple II, although it must be noted that several of the schools, especially late in the project, acquired other computers. The two schools with Tandy/Radio Shack computers did not ultimately participate in the project: in one case, although inclusion in the project had followed an indication that the school would acquire a laser videodisc player, none was acquired, and in the other case, the available videodisc player would not allow external computer control. In both cases, limitations on resources available to the project precluded taking steps necessary to support inclusion of the school in the network. In the first case, it was impossible to respond to the school's request to perform an on-site demonstration to support requests for funds; and in the second case, it was impossilbe to travel to the site to make changes in their videodisc player necessary to allow computer control. Of the two schools with Commodore/Pet computers, one had already created the capability for interactive videodisc lessons, and the project staff provided translations of Apple software created in the project for the other.

Three models of laser videodisc players predominated in the schools in the network: DVA Models PR7820-1 and PR7820-2 and Pioneer Model VP-1000. The exceptions were (1) a Sony player at one site, and (2) customized equipment at one site. The DVA models, which were significantly more expensive than the Pioneer models, had previously been provided to 16 sites located in Washington, D.C., and in the surrounding metropolitan ("Beltway") area, by the U.S. Department of Education, although they had seen little use prior to this study. Although differing in cost, there was not a great deal of difference in the performance of the different videodisc player models in this

Table 1

Listing of Hardware by School, Supplied by Project

Name of School	Type of Computer/Videodisc Player		Equipment Supplied by Project
California School for the Deaf	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface*
Hesperia School District	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Eastern Jr. High School	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Bruce-Munroe Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Petworth Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Shadd Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Syphax Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Tacoma Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Winston Educational Center	Apple II	DVA Model 7820-1	AppleCAT modem
Cambridge Elementary School	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
P.K. Yonge Laboratory School	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
St. Paul Lutheran School	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Lafayette, School Corporation	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Gustavus Brown Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Kenilworth Elementary School	Apple II	DVA Model 7820-1	Videodisc Interface
Rock Creek Forest Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Ann Arbor Public Schools	Apple II	DVA Model III	AppleCAT modem, Videodisc Interface
AERS Project	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Edina Public Schools	Apple II	Pioneer VP-1000	Videodisc Interface
Independent School District #100	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Mid-State Educational Cooperative	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Minneapolis Public Schools	Apple II	Magnavox & Pioneer	AppleCAT modem, Videodisc Interface
Minnessota Educational Computing Consortim	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Mound West Tonka High School	Apple II	Magnavox	AppleCAT modem
Osseo Public Schools	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Roseville Public Schools	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Rothsay Public Schools	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Minot Public Schools	Apple II	Magnavox	AppleCAT modem
Herkeimer Planetarium/BBOCES	Pet	Pioneer VP-1000	Hayes modem, Videodisc Interface Diskmaster 1000
Cal Young Jr. High	Pet	Pioneer VP-1000	Hayes modem, Smart Terminal Package, AppleCAT modem, Diskmaster 1000 + TNW 1000
Bethlehem Pbulic Schools	Apple II	Sony	AppleCAT modem, DVA III Interface
Hurst-Euless-Bedford Independent School Dstr.	Aplle II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface
Barret Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Camelot Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Long Branch Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Prince William County Public Schools	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Richmond Public Schools	Apple II	DVA Model III	AppleCAT modem, Videodisc Interface
J.L. Francis Elementary School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Thomas Jefferson School	Apple II	DVA Model 7820-1	AppleCAT modem, Videodisc Interface
Simon Elementary School	Apple II	DVA Model 7820-1	Videodisc Interface
Oklahoma City Public Schools	Apple II	Pioneer VP-1000	AppleCAT modem, Videodisc Interface

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* Manufactured by Allen Communication.

study; both models proved to be durable and their performance characteristics (e.g., speed of frame search, time required for unitialization) were comparable.

Very few of the schools had acquired printers that could be connected to their microcomputers during the major part of this project, and, as it turned out, this was a significant deterrent to their use of the telecommunication resources provided by the project.

Overview of Support Activities

In order to evaluate the potential of interactive videodisc and telecommunication technologies for basic skills instruction, a variety of support activities were performed. The provision of these services comprised the great majority of the federally supported effort in the project. The support was provided in two broad categories: support for interactive videodisc use and support for telecommunications networking. Within these categories, support consisted of purchase and periodic inventory of interface hardware, preparation of instructions for using the technologies, development of software to enhance the useability of the interface systems, provision of equipment repair and consultation services, and in the case of telecommunications, provision of access to a central mainframe-based network mail and storage capability. To motivate the schools to be active participants and to create a shared frame of reference for project activities, ViM staff prepared on-line information resources, created a monthly project newsletter, compiled and revised a schools directory, and sought advertisement of the project in commercial publications. (Examples of the materials are contained in Appendices B, C, and D, respectively.)

Interactive videodisc support. For schools with Apple computers, a system was purchased consisting of (1) a peripheral card to be inserted in a slot in the Apple, (2) a cable connecting the peripheral card to the videodisc player's remote control plug, (3) a junction box with four cables that allowed the peripheral card to control whether the video screen received its signal from the computer or from the videodisc player, and (4) a floppy disk containing software enabling users to control the videodisc using BASIC language instructions. A copy of the National Kid Disc was included in the package purchased from Allen Communications in Denver, Colorado.

For the sites with Pet computers, a New Media Graphics DiscMaster 1000 videodisc interface was purchased. However, at one of these two sites, staff had already developed their own hardware interface for control of videodisc presentations (Carr, 1982).

The federal government provided three sets of videodiscs for use by schools participating in the project: ten "Infinity Factory" discs, five "Music Is" discs, and, late in the project, five "Villa Alegre" discs. However, these videodiscs had not been developed with the goal of supporting interactive lessons. Rather, they were linear segments very similar to children's programs found on public television. This fact turned out to be a significant barrier to the success of the project, because although schools had equipment in place, they had no videodiscs that were suited to interactive lesson authoring. Thus, although many teachers exerted substantial effort to learn to program in BASIC, they found little success in developing their own lessons by using these discs.

In order to foster use of the videodiscs in interactive lessons, the American Institutes for Research took three significant steps. First, they developed a "lesson authoring" program which would allow users to write "scripts" for lessons by responding to computer-generated prompts for information such as where to place text on the screen, what part of the videodisc to use, what student responses to treat as correct, and what alternative scripts to follow when right or wrong answers were given. Second, they wrote three lesson scripts using the authoring program (called "ViM-SCRIPT"), and third, they developed instructions and conducted workshops to train teachers in the use of ViM-SCRIPT. The ViM-SCRIPT Guide is shown in Appendix F.

ViM-SCRIPT was written in BASIC and in a structured format. This permitted participants to use ViM-SCRIPT as a model to teach programming and to refine, and extend the capabilities of this authoring system. In addition, it was provided in compiled (machine-code) form to increase its speed of operation.

Lessons developed using ViM-SCRIPT consisted of sequences of "actions" that made up "lesson scripts." Four types of actions were implemented:

(a) text presentations,

(b) videodisc sequence presentations,

(c) response gathering and checking, and

(d) "exits" from one series of actions to another.

The ViM-SCRIPT program consisted of an EDITOR for creating and refining lesson scripts and a PLAYER for performing the scripts. In performing a lesson script, the computer would read one action after another from a diskette and either make the corresponding presentation or wait for a specified response from the "student." An example of a segment of a script is shown in Appendix B.

A separate version of ViM-SCRIPT was created for Pet computers. This was accomplished by using the telecommunications capability of the project (described below) to up-load the Apple version of ViM-SCRIPT onto the network and then down-load it onto a Pet computer. AIR then edited the Pet version to conform to the rules of Pet BASIC and to transmit the commands required to control a videodisc player through the Discmaster 1000 interface.

Three general workshops were conducted to train teachers to write lesson scripts using ViM-SCRIPT, two in the Washington, D.C., area and one at a participating site in California. In addition, AIR staff visited the 16 sites in the Washington, D.C., area often, as well as 8 of the other 28 sites, to assist in using ViM-SCRIPT and in using the telecommunications network.

The sites fell into two groups and were treated separately with regard to support of interactive videodisc, as well as network, activities. The 16 Washington, D.C., area sites which had been provided with computers and videodisc players by the U. S. Department of Education formed one of the groups, separate from the remaining sites. A major difference between these 16 sites and the rest of the network was that, with one or two exceptions, they had not already acquired microcomputers for use with students on the basis of a school initiative. The other sites, on their own initiative, had already acquired computers and either had acquired a videodisc player or were reported to be about to make that purchase. A second difference was that the 16 Washington, D.C., sites were geographically close to each other; this made it feasible for AIR staff to visit the sites periodically to provide first-hand assistance and encouragement. (The remaining schools, with the exception of a cluster around Minneapolis, were physically quite distant from their "neighbors" in the network.) Thus, in the Washington, D.C., area, two project staff members visited the sites repeatedly to assist in the installation and use of the videodisc interface and in repair of the computers. The various needs for assistance that arose in the Washington area sites necessitated a re-programming of project resources in order to respond effectively.

The most frequent problems that affected the use of the interactive video hardware were (1) the failure of computer disk drives and (2) the failure of the junction box component of the videodisc interface system. Project sites mailed defective equipment to ViM headquarters in Palo Alto where staff made necessary repairs (or arranged for repairs to be made by hardware specialists).

Electronic Mail Network Support

Forty-seven separate "accounts" were established at the Stanford University Computer, one for each of the participating sites and one each for AIR and the U. S. Department of Education's Division of Educational Technology. These accounts could communicate with each other using electronic mail, and all participants had direct access to information resources stored on the network's central account. The sites with Apple computers were provided with Novation AppleCAT modem systems,which would allow the use of the Apple computer as a remote terminal for communication with the Stanford University Computer. Sites with Pets were provided a Hayes smart modem.

Telephone costs for the electronic mail were paid for by the federal government and were administered through the Stanford Computer. This was accomplished by providing each participating site with access to its local Telenet number. The Telenet system then billed Stanford University for use of its resources, and Stanford in turn billed each of the "accounts," which were supported by the federal contract. In a few cases in which there was no local Telenet access, additional phone costs were reimbursed by the project.

In a number of cases, modular phones were not available at the participating schools and had to be acquired. When needed, the costs of this installation were also borne by the project. In some cases, the introduction of new phone equipment into a school required a significant effort and delay.

The AppleCAT modem system consisted of a peripheral board to be inserted in a slot in the computer, a connector into which a modular telephone jack could be inserted, and a floppy diskette containing software enabling the use of the computer as a terminal via a menu of one character commands. A brief brochure provided with the AppleCAT described the operations available with the modem and software.

The information provided by Novation had been designed for users with some experience using telecommunications equipment and was insufficient for many of the network participants, so AIR attempted to prepare clearer instructions for using the modem. This required several tries at understanding the information needs of teachers and was finally accomplished by a teacher-participant who joined the project staff, Ms. Barbara Ueltschi. (This ViM-WARE Guide is contained in Appendix I). In the meantime, AIR re-programmed the software provided by Novation, deriving "ViM-WARE" from the "Com-WARE" that had been provided. As a result, the 13 step procedure of logging onto the Stanford University Computer via Telenet, including dialing the local Telenet number, was reduced to a single key-press, once the hardware was in place and the ViM-WARE diskette had been "booted." (On an Apple computer, the first program on a diskette is automatically loaded and started in execution when the computer is turned on with the diskette in the disk drive.)

In order to provide motivation for schools to access the electronic mail network, AIR prepared data sets that could be retrieved and downloaded from the Stanford University Computer onto participants' microcomputers. These included:

(a) the project newsletter, updated monthly between May 1982 and January 1983,

(b) a listing of upcoming meetings coverint topics of interest to users of new technologies,

(c) a listing of relevant journals and magazines,

(d) an abbreviated version of the directory of network members,

(e) several short BASIC programs,

(f) a videodisc lesson script.

(g) guidelines for use of ViM-WARE and introduction to the ViM-NET system,

(h) directories of contents for several project-applied videodiscs, and

(i) listings of additional videodiscs that participants might obtain on their own.

To facilitate uploading and downloading data sets from the nework, AIR also provided a set of automatic procedures to make all necessary translations. For example, AIR prepared a program to transmit BASIC programs onto the Stanford computer. This program, called "P" and accessed by the command "EXEC P," translated BASIC programs from their internal form into sequences of transmittable "characters." Similarly, to transmit a ViM-SCRIPT lesson script onto the Stanford computer, it was necessary to translate the script from a "random access" file on diskette to a "sequential" file, and

AIR prepared a program, called "UNFMTR," to accomplish this, as well as a program to reverse the translation, called "FORMATTR."

Finally, to assist participants and keep the network running smoothly, ViM staff arranged for repairs to defective communications equipment (e.g., several modems required such attention), and spent hours on the telephone leading participants through step-by-step system connection and log-on procedures.

Observation

The ViM Network project was intended primarily as an experiment to determine the potential and problems for the use of two technologies in the schools: interactive videodisc and electronic telecommunications. Therefore, from the inception of the project, the aim was to collect information on the progress and problems of use of these technologies and to evaluate particular interactive videodisc courses. During the first three months, two data collection forms were prepared and, together with appropriate justifications were submitted for OMB review. The forms were approved during the sixth month of the project.

The first form consisted of a series of questions to be asked about particular pieces of courseware (reproduced as Appendix G). Although it was provided to all participants for use during the second year of the project, the data that were collected using the form were very fragmentary. The reason for this is that the available pieces of courseware for interactive videodisc did not even begin to exploit the potential of the technology. (This is discussed at greater length in the next section of this report, Findings Based On the ViM Experience.)

The second form was a brief "level of activity" assessment, which was programmed into the electronic mail network sign-on procedure. AIR prepared a macro procedure which would test for the recency of a participant's previous response, present a series of eight multiple-choice questions, shown in Appendix H, and record the results for later analysis. The form was used once in the project to demonstrate its feasibility.

There were three supplements to the data collection described above. First, frequent visits to the Washington area sites and telephone conversations with the participants outside the Washington area provided information concerning activities, goals, and problems. Second, in the seventeenth month of the project and again in the twenty-sixth month, a systematic survey was conducted to assess progress and discuss problems and solutions. Third, data on contacts with the electronic mail network were systematically recorded as a part of the computer billing procedure.

FINDINGS BASED ON THE ViM EXPERIENCE

This project was undertaken with the purpose of investigating the potential of interactive videodisc technology for improving basic skills instruction and the potential of electronic mail for facilitating schools' use of new technologies. Two basic *assumptions* were made at the outset: that the state of *the technology was sufficiently advanced* to warrant such an investigation and that *schools were sufficiently interested* in using the technologies to volunteer to participate in a study. While these assumptions were, to a great extent, borne out by the results of the ViM Network project, they were each subject to limitations that affected the capability of the project staff to provide in-depth evaluations of the technologies. As a result, the findings of the project are much more tentative than had been expected at the outset, and the numerical tables presented must be considered very cautiously in arriving at conclusions about the future of the technologies.

The first of the limitations on the assumptions concerned the existence of courseware using laser videodiscs interactively and even of the existence of videodiscs for which interactive courseware could easily be prepared. Although twenty videodiscs, from the "Music Is", "Infinity Factory", and "Villa Alegre" series, were made available to the schools participating in the project, no corresponding computer courseware to manage interactive lessons was included, and the discs did not lend themselves to the development of such courseware within the project. As a result, the detailed in-depth evaluations of interactive videodisc courseware were replaced by general observations of the usage of videodiscs and recommendations for the design of videodiscs which would lend themselves to interactive courseware development. This is discussed in greater detail below.

The other limitation concerned the interest and capabilities of schools for using electronic mail to communicate with others learning to use the same technology. For a variety of reasons, discussed below, staff of the schools participating in the network used the network much less frequently than expected, and as a result, the conclusions that can be drawn from observations of network use are limited. Teachers generally did not identify needs for communication with other schools that were sufficiently important to warrant the effort often required to move their computer from its place in the classroom to a location sufficiently close to the necessary modular telephone connection, disconnecting the cables and equipment to which the computer was connected in the classroom, and making the connection through the modem to the telephone system.

The implications of these two factors for the operation of the ViM Network project were (1) that the results that could be observed over the two years of operation of the network must be viewed only as early attempts to use the technology and (2) that the efforts of the government's contractor, AIR, had to be significantly re-programmed away from in-depth observation in the direction of developing resources to enhance the potential for use of the technologies within the project. These efforts were described in the Methods section, above.

From this perspective and based on the observation of both the activities and accomplishments-to-date of network participants, we find four categories of factors affecting the use of interactive video and electronic mail technologies in schools:

1. Availability and durability of hardware (i.e., modem, microcomputer, videodisc player, interface, disk drive)
2. Availability and usability of videodiscs for interactive scripting with microcomputers
3. Needs, skills, and time of school staff
4. Ease, relative efficiency, and strength of need to communicate via microcomputer technology

The first of these four categories underscores the importance of purchasing and equipment distribution decisions made at the local level. The second points out an area for product development that has not as yet been mined by producers of videodisc materials. The third category emphasizes the need to adapt technology to the particular environment of the schools in which it is to be placed. And the fourth category, concerned with the value of electronic mail services for schools, makes clear that use of these networks takes time and requires considerable investments by network organizers and operators. Findings from the ViM experience and the prospects for continued use of the technologies involved, may be summarized within these four categories.

Availability and Durability of Hardware

ViM activities underscored the importance to hardware use and software development of a "critical mass" of equipment remaining in service on as nearly a constant level as possible. For the most part, ViM schools had but one interactive video unit available to them, and all but a select number of schools had no staff persons on site who were capable of diagnosing equipment problems and implementing repairs immediately.

Shortage of equipment. ViM participants joined the project with varying amounts of microcomputer hardware. Most schools, however, purchased or had available only one videodisc player, and many had but one microcomputer for much of the duration of the project. (At one ViM site, five videodisc players were earmarked to serve fifty schools in the district.) Use of the interactive video unit thus had to compete with other demonstration and instructional uses of its various components. One common result was that the videodisc player was often used alone, to screen videodisc material for students and other faculty. Most schools, in fact, reported that this stand-alone use of the videodisc player was the common practice, seemed to make best use of available linearly structured videodiscs, and would continue. Moreover, for a number of schools, the microcomputer earmarked for use in the ViM project also saw use in other instructional settings. Interactive videodisc lesson development and implementation therefore had to share time with its use in running software for basic skills instruction and recreation.

Two additional shortages interfered especially with the use of electronic mail. First, modular telephone jacks, which were required for connecting to the modem purchased by the project for use with Apple computers at the schools, were either non-existent at schools or else located only in administrative offices. In the former case, schools had to overcome a red-tape barrier to modify their telephone equipment, and in any case, the use of the electronic mail system frequently required temporary relocation of the computer, with accompanying problems of disconnecting and reconnecting other equipment. Second, the critical importance of printers for use of electronic mail was not foreseen. Experience with the first few newsletters produced for electronic transmission to network members made clear, however, the difficulty and the cost inefficiency of reading many lines of messages while they scroll up the video screen. The project quickly turned to the substitute of sending the newsletters also via traditional mail, because many of the schools had no printers on which they could make a hardcopy version of the newsletters.

Isolation of equipment. Although usually located in media or computing centers (see Table 2), ViM interactive units were available to be moved to individual classrooms (e.g., by means of A-V carts). These "moves", however, tended to provide for little more than wider exposure to the technology. One or two days' use of the equipment was just not enough time to motivate preliminary attempts at mastering an authoring system or developing

Table 2

Most Frequent Locations of Interactive Videodisc Hardware

Library, moved to classrooms on request	10
Computer lab	7
Library/media center	4
District headquarters, moved to schools on request	4

courseware. At the same time, locating interactive equipment in one or two classrooms or keeping it in the media center on a more permanent basis, available for class visitations, tended to isolate the equipment and diminish prospects for courseware development. Ideally, several more interactive units at each school would have been available to increase exposure and provide for a larger pool of prospective courseware developers. Even a "piggy-back" strategy, which would have involved thorough training of ViM contact persons in interactive video and would have required them to spend time working closely with a number of other classroom teachers on a regular basis, would have been likely to fail. This type of an approach takes considerable time: more, certainly, than ViM had available. More importantly, however, such an approach would also have required sufficient equipment for individual experimentation and development.

Mobility of equipment. To persons who are relatively unfamiliar with microcomputer hardware, disconnecting equipment, moving it to a new location, and reconnecting all the wires, boxes, and circuits often proves to be a frustrating experience. At one extreme were a few ViM schools whose security procedures made it necessary to take apart and physically move the interactive video unit to a locked room near the school office at the end of each school day. At other schools, where movement of the equipment was necessary from time to time, media specialists found they were needed more often than not to accompany each move to oversee reconnection. And several schools reported that having to move the microcomputer to a new location to (re)connect it to the telephone line allowing access to ViM-NET was an important factor in their reluctance to use this electronic mail service. Obviously, the connection/reconnection process can be streamlined (e.g., by keeping as many wires as possible in their proper plugs or by marking lead wires), but regular student use of the equipment for instruction may be inhibited if teachers and students must repeat the process over and over. Unlike the film projector that provides involved activity for an entire class in return for the setting-up time it requires, the microcomputer alone or in combination with the videodisc player can provide such activity for, at best, only a portion of the group; in short, the result may be deemed unworthy of the effort required. Once again, it may be that the only complete solution to the problem is to increase the number of microcomputers and videodisc players in the schools.

Equipment failure. Under the stresses of use by students and movement from classroom to classroom, interactive video equipment proved prone to frequent failures. About one-half of the schools needed repair services for some piece of equipment during the life of the project, and several schools never really used this equipment in the interactive mode on a regular basis so as to test the durability of the interface card and junction box. Moreover, several schools reported that the modems assigned to them seemed to be defective and cited these defects as reasons for not using the ViM-NET system. Fewer schools singled out the videodisc player as a problem, but a number did report that their machines failed during the project, occasioning "another trip to the repair shop" and delaying project-related activities. At one site, which used more than one hundred microcomputers and served as a demonstration center for surrounding schools as well as for visitors generally, the interactive unit was seldom used due to videodisc player/ interface problems. At another, the videodisc player seemed to break down constantly, with repairs never completely solving the problem.

Additional improvements in the technology are still needed to ensure the level of reliability needed for widespread school use. Interactive videodisc requires several components (microcomputer, videodisc player, monitor, floppy disk drive, cables, junction box, interface card, floppy disk, and videodisc), and while the failure rate of each one may be quite infrequent, the failure of the combined system is noticeably frequent. Without back-up equipment at the sites, delays and disruption due to hardware failure occurred sufficiently often to constitute a serious deterrent to use of the technology.

Availabity and Usability of Videodiscs

ViM sites were grateful to receive videodiscs as part of the project, but most reported that the educational quality of these materials was questionable and that their adaptability to interactive use was dubious at best. A summary of evaluations returned from the Teachers' Courseware Evaluation Forms sent to participants is shown in Table 3. While the

Table 3

Overall Ratings of Videodisc Courseware

	Positive	Mixed	Negative
Whales	4		
Music Is	1	1	
Infinity Factory	1		1
ViM Study I	2	1	
Villa Alegre			2

evaluation of the National Geographic Whales videodisc was quite positive, respondents had difficulty making good use of the discs provided by the project (Music Is, Infinity Factory, and Villa Alegre) interactively. Many participants expressed the hope that commercial vendors would develop interactive video packages for schools, freeing teachers from courseware development responsibilities and allowing those who wished to engage in such activities to at least have useful material to work with.

Limited selection of videodisc materials. The numbers and contents of videodiscs provided to schools as part of the project were judged by participants to be limited in terms of their educational potential, allowing only minimal range in the selection of stimulus materials for lesson-scripts. The Whales videodisc was considered by most schools to be a superior product, and the majority of schools that used this videodisc showed it to students and other teachers as a stand-alone piece. For the most part, schools reported that the Music Is series also was used in stand-alone fashion, although a few schools attempted some script development efforts using these videodiscs. A problem mentioned with the Music Is series was that its attempts at humor tended to be "silly" to the point of alienating students. The Infinity Factory series was criticized strongly for lacking content and for progressing too slowly. One of the Infinity Factory discs, "Graphing," was successfully used by one school, however. The context of many of the Infinity Factory segments seemed not to travel well to schools located outside of urban areas. More seriously, some of these segments seemed to use rather indirect and often hard-to-recognize strategies to present instructional material, making them inappropriate either as stand-alone or interactive visual stimuli. Ratings of the Villa Alegre series tended to be mediocre, and the lesson script, ViM Study I, produced by the project staff, faired only slightly better.

Several ViM sites were active in searching for videodiscs to supplement the number supplied by the project. Although some schools eschewed this activity, saying that it took too much time and that the videodiscs available for educational use were much too expensive, other, perhaps more enthusiastic participants, turned up quite a variety of materials for demonstration, educational, and recreational uses. One school, for example, currently reports owning a library containing over fifty videodiscs. All schools, however, were unanimous in wishing for a greater variety of educationally-oriented videodiscs available at reasonable cost. Many also suggested that a way should be found to allow videodisc development at the local level at reasonable expense.

Structured versus unstructured content. In addition to the somewhat limited variety of videodisc materials provided to the schools, these materials (as well as those obtained by the schools on their own) tended to either overstructure (e.g., for linear presentation) or understructure (e.g., for use in a cataloging system) visual content. In both cases, development of interactive lesson-scripts was made more difficult. On the one hand, it proved difficult to "break in" to the conversational episodes that comprised the content of the linear discs such as Music Is, Infinity Factory, and Villa Alegre, either to introduce additional material or to extract a series of frames, without losing continuity of presentation. On the other hand, considerable planning and a good deal of microcomputer-generated text were required to thread together several of the still frames to create a lesson. A catalog videodisc, such as one of the Space Discs, for example, might well require as many as one or two hundred hours to produce even a relatively short lesson-script. Since the majority of project-supplied videodiscs were designed for linear viewing, either of one segment at a time or of the entire videodisc, it is not surprising that most schools used and will continue to use their videodisc players as stand-alone teaching tools.

Lack of supportive documentation. Videodiscs that were made available to project schools arrived without manuals or any other information concerning frame locations of visual materials or their suggested instructional uses (other than linear presentation). Several schools reported that they felt rather at sea upon receipt of these materials, not knowing just how they should approach the development of interactive lessons. Many schools recommended that commercial producers of videodiscs develop packages to accompany their products, containing, for example, directories of contents, interactive script ideas, and if possible, full-length interactive scripts that could be used as models for teacher-developers, in classrooms for instructional purposes, or for demonstration purposes generally. One intriguing idea offered by participants was that commercial producers might do well to develop videodiscs to complement existing and popular software material used in schools. Schools, it was noted, would then have directions on how to use the videodisc material together with their microcomputers, based on prior familiarity with the software, and vendors would have a ready-made market for their products.

As an outcome of the review of comments on videodiscs and attempts at interactive videodisc courseware, a characterization of effective design of videodiscs for interactive use emerges. We have aggregated a series of design principles in Figure 1 that apply to information systems, testing, and recreation as well as instruction. The characteristics of effective interactive video relate to (A) adapting to individual differences, (B) minimizing response burden, (C) focus on content relevant to needs, (D) presenting information accurately, and (E) maintaining optimal stimulation.

Characteristics of Effective Interactive Video

Types of use	A. Adapting to individual differences	B. Minimizing response burden	C. Focus on content that fills a need (cover relevant content fully*)	D. Present information accurately	E. Maintain optimal stimulation
1. Information storage and retrieval	• use multiple paths to access data • use cross indexes • use "help" facilities	• use powerful search strategies - menu driven - data structures that conform to user "constructs"	• base decisions on information contained on empirical knowledge of user needs • attempt to exhaust information domain	• validate data-base entries	• vary presentation style (e.g., color of background for text) • use compressed audio as well as video
2. Testing	• use "tailored-testing" theory to minimize number of items needed to reach preset level of measurement precision • use multiple languages as appropriate	• limit responses to what is necessary (e.g., a letter response when a word is not needed) • use non-keyboard entry (e.g., joysticks, touch panels) as appropriate	• obtain measures that will be useful • adequately sample from performance domain in selecting items • check on transfer of learning in new contexts	• maximize test validity by: - establishing validity and reliability of items - using "non-paper and pencil" approaches when appropriate (e.g., stimulations)	• vary item type • vary pacing • incorporate "rests" as appropriate
3. Instruction	• incorporate branching to accommodate users of different cognitive ability • use multiple languages as appropriate • permit those with prior content knowledge to bypass sections and those with special interests to study in depth	• permit user to select density of interaction • use appropriate input devices	• base decisions regarding information to include on assessment of learner needs • optimize efficiency by avoiding areas of common knowledge • break instructional content into reasonable increments of information to enhance learning, then check on learning and remediate as needed • cover all aspects of subject matter	• establish accuracy of content	• vary style and pacing • present novel user choices • use sound, still frame, and slow motion features creatively
4. Recreation	• incorporate game-like components of varying difficulty levels • accommodate multiple level of user goals • include "hidden" information	• (no unique principles --identical to those in the instruction row above)	• identify content of wide interest	• (no unique principles --identical to those in the instruction row above)	• present content in appealing ways that exploit capabilities of the technology • use high fidelity stereo sound • use stop frame and slow motion to give unique perspective

Figure 1. Videodisc Design Principles

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Needs, Skills, and Time of School Staff

A major hypothesis for the ViM project concerned whether schools might be able to develop and share courseware designed to use available videodiscs interactively. The outcomes indicate that schools should not be expected to be the source of substantial pieces of courseware. ViM participants pointed out a number of factors that militate against teacher/media specialist development of courseware, with lack of time, expertise, and incentive heading the list. A list of frequently mentioned barriers is shown in Table 4.

Table 4

Most Frequently Noted Barriers to
Use of Interactive Videodisc Technology

No time for development of courseware	14
Teachers uncomfortable with equipment	12
Shortage of videodiscs appropriate for interactive use	9
School administration does not support needed expenditures	6
Too difficult to write one's own courseware	5
Videodiscs are too expensive, compared to their limited usefulness	4

It was observed, on the other hand, that the energy, personality, and dedication of one or two individuals at a site can lead to significant progress in overcoming these obstacles--allowing courseware development activities to take place and involving other school staff in the development process.

Too little time for development. The most frequent complaint of ViM schools was that teachers and media specialists had too little time to devote to courseware development; just locating and arranging for use of the equipment was cited as a too time consuming activity, not to mention carrying the equipment home, if this was even possible. In most cases, the ViM contact person or a teacher designated by this person was the only individual at a site sufficiently motivated to consider development of an interactive lesson-script during the project. These individuals were not given release time to participate in the project and to develop courseware, so any efforts on their part were in addition to other, regularly scheduled duties. For many, their initial interest and enthusiasm simply could not make up for the lack of time and support available to devote to creating materials. Moreover, these individuals reported that it was unlikely for many other teachers at their schools to be motivated to use free time to experiment with new technologies, since most were less aware of the workings and apparent potential of microcomputers. They suggested that interactive video materials would have to become commercially available before schools would become active users of these types of products.

Insufficient expertise. Teachers tended to have little or no previous experience in developing software. Indeed, many teachers in ViM schools had never before touched the keyboard of a computer. Media specialists and teachers of computer classes were often the only on-site sources of assistance with the equipment, but even the majority of these persons lacked experience in developing instructional materials. Compounding the problem, teachers were sometimes reluctant to seek assistance from (these) specialists, wishing not to bother them or to expose their own lack of understanding. Often, only the ViM contact person knew anything about the technology, and when this individual left the school for health, career, or other reasons (as happened in several cases), the school tended to terminate the activity. At one site, the superintendent finally turned to the school board for assistance, since one of the board's members was familiar with computers and computer systems. At another site, the contact person left the school and took along the videodisc player, which he personally had purchased. The majority of less experienced ViM participants reported that they could have used more on-site "hand-holding" throughout the project, and even the more experienced members suggested that similar projects in the future should sponsor regional workshops to bring all participants together for technical assistance sessions to share problems and solutions.

Absence of administrative leadership and teacher incentives. Several ViM schools reported that their administrations were not supportive of teachers spending time working on the development of courseware. In other schools, administrative support for use of interactive video was present but was not related clearly to school or district-wide instructional priorities. ViM staff noted that teachers had difficulties when they had no sense of what objectives they were trying to accomplish. For many, experimenting with interactive video was just that, experimenting; they did not see clearly just how their efforts related to the larger school program. Related to this point was the matter of tangible incentives for project participation and courseware development. Many ViM participants felt there was an insufficiency of incentives, either from the local level or from the ViM project. As was noted in a number of interviews, teachers and media specialists needed tangible reasons to devote long hours to extra work, even if this work involved the use of a new technology. They suggested that project formation of teacher groups to work on specific courseware might provide a team spirit as well as encourage some friendly competition. Released time for participation in the project and stipends (or extra ViM-NET time) for especially creative efforts also were among participants' suggested strategies.

Communication Via Electronic Networks

A passive electronic network is one where participants may access information whenever they wish, without having to do more than pay a user fee. In contrast, an active electronic network relies on participants to supply messages, news, and other information as well as user fees. A network may be both passive and active at the same time, and it may well be that an active network is best evolved from a passive one, owing to the need for the relatively slow development of a common frame of reference. The ViM electronic mail service, ViM-NET, was intended to be an active communications network, however ViM participants were not ready for such a system. Instead, with but a few exceptions, project participants relied on ViM to provide the rationale for a network and to supply all the information. Attempts were made to meet this responsibility, through the sharing of software, project newsletters, and messages. However, it was not possible to maintain the necessary level of interaction and see development efforts through to completion. Moreover, the TELENET charges proved greater than had been anticipated, and attempts to promote greater usage, in order to observe the patterns more clearly, were countered by the realization that the project's resources would be quickly consumed if a high level of usage were achieved and maintained for a significant length of time.

Patterns of usage. Use of the network was heaviest during the second year of the project, when software and hardware for communication was in place, and schools were "challenged" to log on and eager to signal their involvement in the project. A record of the usage of the electronic mail facility is shown in Table 5. When students were allowed (and rewarded) to use the Network during this period, as they were at a small number of sites, they proved to be among the most active contributors (helping their schools to quickly exhaust ViM-NET allotments in the process!). Not all schools successfully communicated using ViM-NET during the first part of the 1982-83 schoolyear, and some schools continued trying to master the hardware and software until they did succeed in logging on in the spring of that year. Once schools had successfully used the network, however, the novelty soon wore thin, the numbers of messages declined, and, eventually, many modems were boxed and put away on shelves. Although some schools tried to establish "pen-pal" linkages between their students and students at other schools, these linkages tended to last a short time only. No prolonged, substantive communications were ever conducted between schools using ViM-NET.

For the most part, participants had no information to exchange that would make use of the advantages of electronic mail, and the costs in terms of staff effort to use electronic mail deterred use. Telephone calls were much more comfortable for exchange of ideas, software could more easily be sent by mailing floppy diskettes, and newsletters required substantial time just to receive, store on disk, and then print, when reception was at only 30 characters per second and printing not a great deal faster. To realize the great advantage of electronic mail for trading courseware, such as videodisc lesson scripts, created by staff at schools, a much larger set of

Table 5

Number of Connect-Minutes on
ViM Network for Six Months

	Nov 82	Dec 82	Jan 83	Feb 83	Mar 83	Apr 83
S11	27	60	101	3	4	
S12	148	37	33	20	42	60
S13	60	24	2		34	
S14		1	211	198	140	28
S15	55	83	151	25	9	72
S16	3		37		171	11
S17	373	379	345	234	248	45
S18			1			
S19	50	15	43	6	10	39
S20	51	44	34	12	17	6
S21						
S22	14				7	
S23	5					23
S24	61	48	58	116	31	
S25		3		54	6	34
S26						26
S27	35	5			5	
S28				5		
S29			3	48	458	233
S30						
S31	12		42			100
S32	152	93	65	29	37	
S33			2			
S34			2		102	
S35	32	114	84	6	21	44
S36			1	8		
S37	35	31	11			
S38	47	24	93	21		
S39		70	24	4	81	52
S40	46	94	5	8		
S41		6				
S42			24	20	2	
S43						
S44	1		21		3	
S45						
S46					2	
S47			17			
S48						
S49	1	79		80	21	21
S50				2	2	
S51	45	15				
S52	257	57	37	16	48	
S53	92	2	47			
S54						
S55	24	31			23	
S56	97	125	302	134	67	14

participants is needed; and improvement of speed of communication, to at least 120 characters per second, with a minimum of redundant characters, is also needed.

Hardware- and software-related problems. Many sites experienced problems using modems and the communications software provided by the project to log onto the system. Although most schools successfully logged onto the system at least once, many reported they could not get their modems to work, and changes in telephone access numbers to the TELENET system made repeated modifications to software necessary, causing delays and frustration. At some sites, the required telephone jack was located at a distance from the microcomputer, and telecommunicating began by carrying the microcomputer to the jack. At the two sites where Commodore-PET microcomputers were the principal link to ViM-NET, different hardware had to be identified and ordered, and different software had to be developed. These Commodore-PET sites were among the last schools to attempt to use the mail system. Despite all the problems, however, participants reported that (1) easier access to the system, enabled by on-site technical assistance and a more permanent set of telephone access numbers, and (2) more reason to log on (e.g., as part of a passive network) would have increased usage of the network.

Sharing software. Use of the network for uploading and downloading microcomputer programs (not necessarily interactive video programs) seemed a promising idea when it was introduced during the first project year and, for a number of schools, still holds considerable promise. Two problems, however, combined to make this approach of communicating via the network infeasible for ViM. First, programs that were to be transmitted had first to be translated into "sequential" files of characters that would be recognizable by the mainframe computer being used for the network. Although a procedure was provided for carrying out this translation for BASIC programs, and for ViM-SCRIPT lesson scripts, these were somewhat tedious, and they did not allow transmission of machine language subroutines called by the programs. Moreover, users who down-loaded the programs from the network onto their computers had further to perform the reverse translation. Again, procedures were provided, but they proved sufficiently cumbersome to deter their use.

Second, although copyright restrictions were not an issue in the case of the public domain software contributed to the network for sharing to the schools, some sites nevertheless worried about the possible copyright problems that might arise if the network should adopt software sharing as a principal activity.

Technical assistance via electronic networks. Sites needing technical assistance in maintaining and using ViM equipment relied on the telephone, rather than electronic mail, to request assistance from AIR. Schools wishing to share lists of available materials, press clippings, and so on with project staff most often relied on the postal service. And the majority of participants who mentioned technical assistance among the items critical to the success of this type of project called for on-site or regional meetings to share ideas and help resolve problems. On the surface, it would seem as if electronic mail services have little to offer in terms of technical assistance. However, it is more likely that ViM-NET just did not reach the maturity necessary to succeed in this type of helping endeavor. Electronic mail services have the potential of contributing to the technical assistance process when there is a shared vocabulary for stating problems, when project-related interests among participants overshadow anxieties in using the equipment, and when sufficient resources allow special attention to especially difficult cases. These conditions were not all satisfied during the ViM experience, but they can and should be satisfied in future projects of this type.

CONCLUSION

Compared to the state of the art at the beginning of the project, it is much clearer now that interactive videodisc use for basic skills instruction requires a level of sophistication in design not yet achieved in available educational videodiscs. Educators continue to see, as they did two years ago, the exciting prospects which can be realized through effective use of this technology; but the actual implementations have not yet occurred. Schools can be expected to wait until they see effective interactive videodisc courseware before counting on it for basic skills instruction; and in the meantime, they will continue to use videodiscs for presentation of video information much in the way that they use filmstrips.

The value of electronic mail networks for elementary and secondary schools' use was not demonstrated in the short time frame of this project, both because schools did not have the time to develop patterns of sharing information that would make good use of the medium and because the methods for using the network to upload and download software were cumbersome. Although a one key-press procedure for dialing the network and logging onto the system was made available to participants, a variety of barriers compounded by time pressure on teachers militated against a high level of usage of electronic mail.

The innovations demonstrated in the ViM Network project were subject to essentially the same problems observed in prior studies of the dissemination process. No single problem occurred at every school, but each of the types of problems occurred at some schools. At about one third of the schools where there was and is enthusiastic, stable leadership to develop technological solutions to eduational problems, progress is being made. Some schools have made, or are contemplating, their own videodiscs, while others still view the technology as something to be endured. Throughout the project, however, one thing has become clear: that in all the schools there is a desire to do what is best for educating children, and what strategies are chosen will be those that can be demonstrated to be effective in achieving that objective.

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APPENDIX A

Participants in the VIM Network

California

California School for the Deaf
Hesperia School District

Connecticut

Eastern Junior High School

District of Columbia

Bruce-Monroe Elementary School
Capitol Children's Museum
Petworth Elementary School
Shadd Elementary School
Simon Elementary School
Syphax Elementary School
Takoma Elementary School
Webb Elementary School
Winston Education Center

Florida

Cambridge Elementary School
P. K. Yonge Laboratory School

Illinois

St. Paul Lutheran School

Indiana

Lafayette School Corporation

Louisiana

St. Martin's School

Maryland

Gustavus Brown Elementary School
Kenilworth Elementary
Rock Creek Forest Elementary School

Michigan

Ann Arbor Public Schools

Minnesota

AERS Project
Edina Public Schools
Independent School District #100
Mid-State Educational Cooperative
Minneapolis Public Schools
Minnesota Educational Computing Consortium
Mound West Tonka High School
Osseo Public Schools
Roseville Public Schools
Rothsay Public School

North Dakota

Minot Public Schools

New York

Herkimer Planetarium/BOCES
Kenmore Public Schools
Oklahoma City Public Schools

Oregon

Cal Young Middle School

Pennsylvania

Bethelehem Public Schools

Texas

Hurst-Euless-Bedford Independent School District

Utah

Waterford School

Virginia

Barrett Elementary School
Camelot Elementary School
Long Branch Elementary School
Prince William County Public Schools
Richmond Public Schools
Thomas Jefferson Elementary

ViM Network

APPENDIX B

Videodisc–Microcomputer Network
Don McLaughlin, Director

Assessment of Basic Skills Software
Darlene Russ-Eft, Director

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Network News

Hang In There!

As many of you know, AIR has applied for funds to continue the ViM Network. If this proposal is approved, the Network will be supported, at reduced levels, for the 1983-84 school year. Several ViM contact people wrote letters in support of continuation of ViM, which have been forwarded to the Secretary of Education. We would like to extend our thanks and appreciation to Phil Kessinger (S29), Rod Brawley (S27), and Laura Latzke (S24) for their well-expressed enthusiasm. Of course, we are also most grateful to all other ViM-NETTERS who may have supported us electronically!

Progress Report: Classroom Teacher's Courseware Assessment

Have you returned your Courseware Assessment? As before, the shaded area represents the percentage of Network contact people who have sent theirs in. How about YOU??? Please help us climb to 100%!

(Letters of support for continuation of the Network should be sent Dr. Robert J. Rossi, American Institutes for Research, P.O. Box 1113, Palo Alto, CA 94302.)

First Issues of *Videodisc News* Distributed to Network

The first issues of Videodisc News have now been received by AIR and distributed to Network members. This publication, whose subscription price is $144 per year, is being sent free to ViM members in return for their comments and evaluation. The February and March issues feature a write-up of the VIM Network. A further follow-up is planned for a later issue. Videodisc Services, parent company of Videodisc News, is also involved in production of an interactive video program for teaching phonics and reading to elementary school students. Bob Rossi and Darlene Russ-Eft recently viewed a preview disc from this program and were excited by its potential. More about this in a [illegible]

Revised VIM Network Directory Mailed Out

[illegible] edition of the VIM Network Directory has been sent to Network members and friends. For this edition, each VIM site was asked to update and amend its description from the first edition, which was compiled last January. We would like to thank those who took the time to do this. Anyone who has not received a Directory should contact Pat Spurr at AIR [illegible]

From the Field

InfoWorld Notes New Instructional Modules from MECC

The Minnesota Educational Computing Consortium (MECC, 553) and its new computer literacy [illegible] the June 27 issue of InfoWorld. MECC's 26 [illegible] children about computers, are intended to be used in conjunction with traditional classroom subjects such as math, science, and social studies. Richard Pollack, MECC's director of special products, [illegible] takes a content area and teaches concepts about computers [illegible] The aim is to use traditional topics to [illegible] A social science teacher, for example, might discuss such subjects as computers in government, computer crime, and computers in daily life, while a math teacher might spend time discussing how a computer is used in areas where math is important.

Each module contains background material, text material, suggestions for student activities, [illegible] and instructions for computer-based learning. Modules also include computer programs designed for an Apple II microcomputer with one disk drive and 48K of RAM. Future plans include software designed for other computers as well, including the IBM PC and the Commodore 64. Currently, the entire set of 26 modules must be purchased together, at a price of $405; individual modules should be available for purchase separately [illegible] a few months.

APPENDIX C

VIM NETWORK DIRECTORY

December 1983

California School for the Deaf

Rev. 12/83

Horace Street
Riverside, California 92506
(ViM-NET Code--S27)

The California School for the Deaf is one of two California public schools serving 6- to 21-year-old deaf and multiple-handicapped students. Approximately 525 students are enrolled at the Riverside campus. It is a residential school with separate programs for Grades 1 to 6, 7 to 9, and 9 to 12. Instructional technology, in recent years microcomputer and videodisc technology, has been explored for applications that would be of special benefit to the school's handicapped population. As a result, two microcomputer labs are regularly used by students at the junior high and high school levels. Staff have also developed a microcomputer-videodisc interface card and authoring system.

Available Videodiscs and Other Software for Basic Skills Instruction

The California School for the Deaf has located its microcomputer labs in the upper and middle grades. Both labs use Apple micros in a "networked" configuration, sharing a CORVUS hard disk drive. At the upper grade levels, the equipment is used primarily for drill and practice in areas that range from typing to mathematics. The "Math Cities" software is used extensively because it covers content from arithmetic to geometry and has a management system. Software is being acquired for the lab at the lower levels, which will be used primarily for skill development in language arts.

Use of ViM Equipment and ViM-NET Electronic Mail Service

With support from ESEA Title IV(c), the California School for the Deaf began a videodisc interface and software development project in 1979. Since that time, they have produced two videodiscs, a program authoring and management system, and an interface to connect the Apple II and the Pioneer VP1000 videodisc player. Their interface will superimpose Apple-generated text onto video generated by the disc player. The authoring system will be used initially for the creation of instructional materials in language arts.

Note of Particular Interest

An interesting product of the California School for the Deaf's system is a project-designed carrel for housing the various components of the interactive system. The microcomputer keyboard, videodisc player, monitor, printer, and disk drive are all installed in a single integrated unit; access to any component except the monitor can be controlled by locking "doors," so that students have access only to those components they need. (For example, younger students interact with the computer via a light pen, and do not need the computer keyboard.)

Hesperia School District

Third Street
Hesperia, California 92345
(ViM-NET Code--S51)

The Hesperia School District joined the ViM Network in summer 1982. A rural, K-6 district located on the edge of California's Mohave Desert, Hesperia has its four largest schools located together in the city and its fifth and smallest school (only 22 students!) situated some 23 miles distant. Fully committed to computer technology for instructional purposes, the district has two Computer Curriculum Corporation CCC-7 (Data General 1700 minicomputer) mainframe systems supporting 120 terminals at the four largest schools, one TRS 80 microcomputer providing special education instruction at the smallest (i.e., fifth) school, two Apple II microcomputers used together with 32 of the Data General terminals in one school's "electronic library," and several Sony microcomputers. In addition, one school has connected to the Data General system 16 digital speech units that are programmed to teach first and second graders the process of reading. Five Pioneer VP1000 players and three printers round out the district's collection of hardware. Given this extent of commitment to instructional technology, Hesperia viewed the interactive use of microcomputers and videodisc players as one more step in the process of freeing teachers to concentrate on the personal and social needs of students while the hardware and software systems provided basic skills instruction.

Available Videodiscs and Other Software for Basic Skills Instruction

All DET-produced and DET-supplied videodiscs have been screened in Hesperia. One constraint upon the district's purchasing of commercially-produced videodiscs is that they must all be rated "G," or "approved for general audience viewing," and the selection of videodiscs of this type is extremely limited.

With Hesperia's considerable emphasis on the use of computer technology, a number of basic skills software packages are employed with the TRS 80 and Apple II microcomputers. For the Apple computers, these packages include Math Strategy, Spelling Strategy, Super Map, Moptown, Apple Writer, Goodspell, and Magic Spills. DLM (Arcademic Buildings) courseware includes Addition--Alien Addition, Subtraction--Minus Mission, Multiplication--Meteor Multiplication, Division--Demolition, Alligator Mix Addition/Subtraction, and Dragon Mix Multiplication/Division (Sterling Swift, Apple Based Elementary Mathematics Classroom Learning System). In addition, Hesperia's special education department uses mathematics software for its TRS 80 called "The K-8 Mathematics Program with Student Management," put out by Tandy Corporation.

This extensive software library (which includes numerous CCC "hard disk" materials designed for the Data General systems) coupled with the numbers of terminals and microcomputer stations has made it possible for all students in Grades 1-6 in Hesperia to spend at least 20 minutes per day at the keyboard.

Use of ViM Equipment and ViM-NET Electronic Mail Service

ViM-SCRIPT is now being experimented with as a means of linking the content of videodiscs to microcomputer-stored text files for instructional purposes in Hesperia. A two-day visit by an AIR/ViM staff person to demonstrate ViM-SCRIPT capabilities took place in January 1983. This demonstration, entitled "How to Build Interactive Programs with Existing Videodiscs," consisted of three workshops attended by Hesperia's school principals, administrative personnel from Hesperia and several neighboring districts, and teachers from host school Mesa Grande.

Note of Particular Interest

For its tiny, remote school, Hesperia utilizes a TRS 80 microcomputer to provide remedial instruction for the two special education students enrolled. With the coursework planned by the district's special education staff and daily performance monitored by teachers at the site, the special instructional needs of these students are met on a daily basis--without the travel costs and burden that might otherwise have accompanied the delivery of these services.

Eastern Junior High School

Rev. 12/83

Hendrie Avenue
Riverside, Connecticut 06878
(ViM-NET Code--S54)

Eastern Junior High School, serving about 820 students in Grades 7-9, is located in an upper-middle-class community in southern Connecticut. Use of interactive technology at Eastern is a recent but quickly growing area of school activity. Ten Apple microcomputers, with disc drives and printers, have been introduced into the school as part of a district-managed program. This equipment is located in the school media center where it is accessible by both students and staff.

Available Videodiscs and Other Software for Basic Skills Instruction

Microcomputer use for student instruction is primarily aimed at developing programming skills. Relatively little computer time is dedicated to computer-assisted instruction. Programming is an elective course offered to 9th Graders and an enrichment opportunity for 7th Graders. Additionally, much use of the microcomputers is made by interested students on a sign-up basis during open periods. The microcomputer technology is also used as part of an extensive district-managed program in professional development for teachers.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Riverside uses a DVA-III videodisc player. Its videodisc collection includes the ABC/NEA Physical Geography disc and the Tacoma Narrows Bridge disc, in addition to those supplied through the Network. Programmers have chosen to develop interactive code using Apple's Super Pilot, rather than the AIR-authored ViM-SCRIPT. The videodisc equipment is currently being used to demonstrate the potential of the technology to teachers and to supplement student use of microcomputers in instruction.

Riverside staff decided to join the ViM project because of the strong interest of a particular staff person in interactive video. The greatest value of the project is considered to be the opportunity to identify others throughout the country who share this interest.

Bruce Monroe Elementary School

Georgia Avenue, N.W.
Washington, D.C. 20001
(ViM-NET Code--S34)

Bruce Monroe Elementary School serves 495 students with 19 classroom teachers and two administrators. Located in the District of Columbia, Bruce Monroe joined the ViM project in the spring of 1982. Its media specialist and math resource teacher have been instrumental in training students and staff in the use of the microcomputer and videodisc player.

Prior to joining the project, Bruce Monroe had no computer equipment. It has since acquired an Apple II+ with disk drive, a Panasonic color monitor, and a DVA-I videodisc player.

Available Videodiscs and Other Software for Basic Skills Instruction

Bruce Monroe's collection of videodiscs includes the Music Is series, the Infinity Factory series, KIDISC, Villa Alegre, and the National Geographic Whales disc. Its computer software includes Bumble Games, various Softswap programs, Villa Alegre Beamers games, and the Apple Keyboard. Staff have also used the Punctuate It! videodisc from Osseo, Minnesota.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Much effort at Bruce Monroe has gone into acquainting the children with the computer and its functions. Classes in computer literacy are scheduled on a regular basis beginning in Grade 3. Staff were particularly pleased with the Punctuate It! videodisc from Minnesota because it met many of the instructional needs of their students. They have also used the Whales videodisc with many students and are enthusiastic about it.

Student use of the ViM-NET electronic mail service is encouraged, and Bruce Monroe will participate with other Washington, D.C.-area schools in Apple-to-Apple communications.

Capitol Children's Museum

Third Street, N.E.
Washington, D.C. 20001
(ViM-NET Code--S36)

The Capitol Children's Museum is a unique site for the demonstration of microcomputer-videodisc technology. Located within the District of Columbia, the Museum draws visitors from throughout the Washington metropolitan area. Annual visitorship to the museum is estimated at 250,000. The museum has long been a center of computer activities for children and has a fully equipped computer classroom with 20 Atari 800 computers. The museum also has an additional 29 Atari 800 computers for use in various exhibits and for software development. The equipment obtained for the ViM project, an Apple II microcomputer and a DVA-II videodisc player, are being incorporated into an exhibit on the history of human communication.

Available Videodiscs and Other Software for Basic Skills Instruction

Unlike the various schools and school districts that are participating in the project, the Capitol Children's Museum is not using its equipment and courseware for instructional purposes. Currently, just the videodisc player is used in an exhibit; the videodiscs being used with it are KIDISC and Fun and Games. They expect to augment this display with the full interactive videodisc-microcomputer system sometime in the next few months.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The communications exhibit where the ViM equipment will be located is designed for use by the children who tour the museum. Tours generally last 90 minutes or so, of which 10-15 minutes will be spent at the ViM display. Individuals visiting the exhibit, of course, will have unlimited exposure to the ViM display.

Staff at the Museum have not as yet used the electronic mail service. Once the interactive videodisc and microcomputer system is in place, however, they plan to use it to comunicate their experiences to other project participants.

Petworth Elementary School

Eighth and Shepherd Streets, N.W.
Washington, D.C. 20011
(ViM-NET Code--S20)

Petworth Elementary School is a small urban school serving 245 students and staffed by 11 regular classroom teachers, eight special teachers, and one administrator. Petworth joined the ViM project last August, with the objectives of helping its staff and students become more familiar with computers and to increase their capabilities to retrieve and share information. In addition to an Apple II microcomputer and a DVA-I videodisc player, Petworth uses a Color Novation interface. Staff have also purchased play paddles to add to the system.

Available Videodiscs and Other Software for Basic Skills Instruction

For the most part, Petworth's videodisc use has centered around the Infinity Factory series. Recently, the National Geographic "Whales" disc was tried out with a group of students, and reactions were very positive. Several sets of microcomputer software have also been obtained, including the Bumble Bee Games, Greenstone Road Trip, and Genesis I. In addition, teachers are using the SRA Word Skill for the Microcomputer and SRA Arithmetic Games series for basic skills instruction. At present, the computer software is being used by approximately 50 students in Grades 1-6; however, it is expected that all students will be exposed to the microcomputer by June 1983.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The ViM equipment at Petworth is used with students in Grades 1-6 to teach computer literacy and to reinforce basic skills. Usage of the microcomputer averages 20 hours a week. On one day each week, the equipment is reserved for use by gifted and talented students; students in regular 1-6 classes are scheduled for the other four days.

Staff at Petworth look forward to using ViM-SCRIPT. They plan for several staff members to become competent in designing and creating courseware with it. ViM-NET is being used weekly at Petworth, primarily for sending messages but also for downloading programs (which they do every other week or so) and, on occasion, for uploading.

Shadd Elementary School

East Capitol Street, S.E.
Washington, D.C. 22019
(ViM-NET Code--S17)

Shadd joined the ViM Network in October 1981. An urban K-6 school serving approximately 400 students and staffed by 23 teachers and one administrator, Shadd joined the project with the aim of promoting computer awareness and computer literacy among its staff and students. Although Shadd had no computer hardware prior to joining the project, it now uses its Apple II microcomputer and Discovision DVA-1 videodisc player with its own software to teach students basic skills.

Available Videodiscs and Other Software for Basic Skills Instruction

Shadd has received most of the DET-produced videodiscs (the Infinity Factory and Musis Is series), and has several software materials for the microcomputer (the Bumble Bee Games, System Master prcgrams, and programs from Arithmetic Teacher and Creative Computer). In addition, Shadd staff have themselves created a number of programs, including interactive programs for the microcomputer and videodisc player.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Shadd's Apple II is used (most frequently in a non-interactive mode) approximately 25 hours per week, by students in Grades 1-6. The microcomputer and videodisc player are used interactively about eight hours a week, primarily with third- through sixth-graders. Students are selected by teachers for computer instruction; however, efforts are made to give all students at least an introduction to the computer.

Staff have found ViM-SCRIPT very useful in creating their own software, noting that it helps ease the pain of detailed programming (though with some loss in terms of flexibility). They look forward to developing a set of sample programs in the several disciplines to share with other schools.

Staff at Shadd are also using ViM-NET extensively and for a variety of purposes, generally logging on at least once each day. The major ViM-NET activities have been sending messages and downloading programs; the latter is done, on the average, a couple of times a week. They are currently working on uploading a program, and have also flashed messages to all users on one or two occasions. One "secret" of Shadd's extensive use of the system is that they allow some of their Grade 6 students to send messages to other Network members.

Note of Particular Interest

Shadd's staff are excited about their experience in using microcomputers and videodiscs to teach basic skills. They believe that the presence of this technology in their school has had, and will continue to have, a profound effect on learning attitudes and patterns. They look forward to involving teachers more in this effort and to exploring uses for gifted and talented students; they are also considering having a competition in the area of programming, as a means of stimulating creativity and sharing.

Simon Elementary School

Mississippi Avenue, S.E.
Washington, D.C. 20032
(ViM-NET Code--S32)

Simon Elementary School, an urban school serving approximately 600 students, is staffed by one administrator and approximately 25 teachers. Simon joined the ViM Network in the spring of 1982; its general objective was to promote the use of computers to assist students in mastering basic skills and to motivate them to prepare for the "new technological era."

Simon's involvement in computers is relatively recent; before joining the ViM Network, the school had no computer equipment at all. Through the project, it has acquired a Bell and Howell Apple microcomputer with disk drive, a Panasonic color video monitor, and a DVA-II videodisc player. To date, the school has purchased no additional hardware. Simon's Apple microcomputer is currently used by approximately 60 students in Grades 4-6. Assigned to the computer in groups of eight to ten, all students are able to use the computer twice a week for approximately two hours. In general, Simon's Apple is used about 15 hours per week, while the videodisc player is used for about four hours. To date, the microcomputer and videodisc player have not been used interactively.

Available Videodiscs and Other Software for Basic Skills Instruction

Simon has most of the DET-videodiscs (the Music Is and Infinity Factory series). At the present time, it has no videodiscs except those supplied by the project, but it has acquired the Bumble Bee games package and the Beltway diskette.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Simon staff use their Apple on a daily basis to log onto ViM-NET; the service has been used to download and upload programs and to receive messages. Although staff have experimented with interactive use of their microcomputer and videodisc player, they have not yet used ViM-SCRIPT to develop their own lessons. Creating their own programs, however, is high on Simon's list of priorities, and staff hope to begin writing their own interactive "scripts" in the near future.

Syphax Elementary School

Half and N Streets, S.W.
Washington, D.C. 20024
(ViM-NET Code--S18)

Syphax was one of the initial participants in the ViM Project. Prior to joining the project, Syphax had had no computer hardware or peripheral equipment, and thus no experience in integrating microcomputer or videodisc equipment into the educational program. Syphax's objective in participating was to gain an understanding of the significance of educational technology as it relates to the educational process. They now have operating an Apple II microcomputer, a DVA-I videodisc player, and a telecaptioned television. In addition, they have acquired an AppleCat modem and an Allen interface. The ViM equipment is being used in three ways at Syphax: to expand children's cognitive capacties in reading, math, and language arts; to provide drill and practice for students performing below grade level; and to provide advanced training for above-level students.

Available Videodiscs and Other Software for Basic Skills Instruction

Syphax is using most of the DET-developed videodiscs, including the National KIDISC, the Infinity Factory series, and the Music Is series. Microcomputer software in use includes Lemonade Stand, Oregon Trail, and States and Capitals, as well as Basic English--Nouns, Verbs, Adverbs, Pronouns, Adjectives.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The microcomputer is being used at Syphax primarily by students in the upper grades (Grades 4-6) and by special education students. Usage averages about twelve hours a week. The microcomputer is generally available to teachers upon request; however, some time in the afternoons is set aside for use by the school's Computer Club. The videodisc player is used with students in all grades and it is also available for use by teachers on request. In the future Syphax expects to expand use of the ViM equipment and to involve more students on a regular basis. The ViM contact person at Syphax is enthusiastic about ViM-SCRIPT, although she has only just begun to use it.

Takoma Elementary School

Piney Branch Road and Dahlia Street, N.W.
Washington, D.C. 20012
(ViM-NET Code--S33)

Takoma Elementary School, a modern open-spaced urban school, joined the ViM Project in January 1982. The primary objective addressed initially was to introduce technology to students and staff in various interactive modalities.

Since joining the project, Takoma has acquired an Apple II+ with disk drive, a Panasonic color monitor, a DVA videodisc player, a telephone modem, and an Allen interface card. The school has installed a telephone line for Network use.

Available Videodiscs and Other Software for Basic Skills Instruction

Takoma's basic skills software includes the National KIDISC, the Infinity Factory and Music Is series, the National Geographic Whales disc, Villa Alegre, and the Punctuate It! videodisc. Microcomputer software includes math and language arts programs from a variety of producers.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The microcomputer is used in a variety of settings for gifted and talented students, remediation math, enrichment activities, and BASIC programming instruction. Teachers use the equipment with their students on a sign-up basis, transporting it to their teaching areas.

Webb Elementary School

Mt. Olivet Road, N.E.
Washington, D.C. 22002
(ViM-NET Code--S19)

Ruth K. Webb Elementary School is a small school located in an urban area. The school serves 584 students, with 35 teachers and two administrators. Webb has been active in the ViM Project since it joined in March of 1981. Its goal in joining the project was to train a teacher to serve as a coordinator of computer use in the school; the coordinator would, in turn, be expected to train other teachers to use the computer in their classrooms. Further, the coordinator would generally be responsible for integrating the computer into ongoing school programs.

At the time that it joined the project, Webb had no computer equipment. Upon joining, it acquired a Bell and Howell Apple computer and disk drive, a Panasonic monitor, a DVA videodisc player, and a Sears telecaptioned television.

Available Videodiscs and Other Software for Basic Skills Instruction

Webb has compiled a collection of eleven videodiscs, as well as other microcomputer software, for use in basic skills instruction. These include the Infinity Factory and Music Is series, New Dimensions in Communication, Learningware (history), MicroLearningware (geography), Hartley (language and math), Bumble Bee (math), the Beltway disc (social studies, language, math, and science), and Orange Cherry Media (social studies).

Use of ViM Equipment and ViM-NET Electronic Mail Service

The videodisc and microcomputer were first used at Webb in September 1982. The microcomputer is used by students at the pre-kindergarten through 6th Grade levels, with usage averaging 20 hours a week. Videodiscs are used only with the upper grade students (4-6), and are used approximately 5 hours each week. At this time, the videodisc player and microcomputer have not been used in an interactive mode.

Separate user schedules are maintained for the microcomputer and for the videodisc player. Included in the microcomputer schedule are five periods for students who are learning to program in BASIC. Teachers are also able to request time periods during which they can integrate either of the materials into their overall classroom program.

The ViM contact person at Webb has just begun using ViM-SCRIPT and plans to develop a lesson weekly.

The electronic mail system has been used extensively since November 1982; staff report logging on about four times a week on the average. Programs have been downloaded several times, and numerous messages have been sent.

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Note of Particular Interest

The ViM contact peson at Ruth K. Webb Elementary is enthusiastic about the system, reporting that she is learning and "enjoying every minute of it," and that it has opened up a new way of life for the children in the school who use it. The school also uses microcomputer games as rewards for good behavior and outstanding work, both of which have greatly improved as a result.

Winston Education Center

Erie Street, S.E.
Washington, D.C. 20020
(ViM-NET Code--S35)

An urban school located in Washington, D.C., Winston Education Center is just beginning to become involved in the use of microcomputers for basic skills instruction. Winston serves a total of 607 elementary and secondary students and is staffed by 23 elementary teachers, 11 secondary teachers, and two administrators. The school joined the ViM Project in April 1982 with the general objective of fostering computer awareness and computer literacy.

Before joining the Network, Winston had no computer equipment at all; through the project, the school acquired an Apple II microcomputer with monitor and disk drive and a DVA-II videodisc player, together with an Allen interface card and AppleCat modem. Winston's computer equipment is currently being used by two resource teachers. With Grades 3-6, these teachers are introducing and reinforcing mathematics and language arts skills and concepts and teaching problem-solving skills. Computer use ranges from about 13 hours per week for 6th Graders to two hours per week for 3rd Graders.

Available Videodiscs and Other Software for Basic Skills Instruction

Winston has all the DET-produced discs, including the Infinity Factory and Music Is series and the KIDISC. No commercially-produced discs have so far been purchased. In addition, the school uses the Bumble Bee games, SOFTSWAP, and Newberry Winners, as well as several of the materials produced by the Minnesota Educational Computing Consortium.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Winston has used the ViM-NET service extensively and has downloaded several programs. School staff have also experimented with interactive computer-videodisc courseware, but, due to a delay in receiving their Allen card, which was installed only recently, they have not yet had time to develop any interactive programs themselves. Future plans at the school include beginning to write interactive videodisc lessons in mathematics, music, and language arts.

Cambridge Elementary School

Rev. 12/83

Cambridge Drive
Cocoa, Florida 32922
(ViM-NET Code--S50)

Cambridge Elementary School, located near Cape Kennedy, has an enrollment of approximately 560 children in kindergarten through the 5th Grade. It is one of 64 schools in a district that stretches 90 miles along the Atlantic Coast. District involvement in microcomputing had been focused primarily at the high school level until the 1982-83 school year, when the school board made a commitment to microcomputers and provided additional funding. Cambridge has recently acquired two Apple II microcomputers and a Pioneer videodisc player, having had the purchase delayed for some time due to lack of funds.

Cambridge requested membership in the ViM Network in the spring of 1982. Staff had become aware of the potential of interactive videodisc equipment through the dissemination activities of staff of another project site.

Available Videodiscs and Other Software for Basic Skills Instruction

Videodisc technology was introduced to the staff of Cambridge through an inservice workshop. As a result, a number of Cambridge faculty have begun to use the videodiscs provided through involvement with the ViM Project (the National KIDISC, Infinity Factory, and Music Is).

Use of ViM Equipment and ViM-NET Electronic Mail Service

Videodiscs provided through the ViM Project have been used for both math and music instruction at Cambridge. The library media specialists have incorporated use of the National KIDISC into computer literacy classes conducted with the 4th- and 5th-grade students.

Until January 1983, the videodiscs were used in a "linear" fashion rather than interactively, because a microcomputer was not available for controlling Cambridge's videodisc player.

P. K. Yonge Laboratory School

Southwest 11th Street
Gainesville, Florida 32611
(ViM-NET Code--S55

P. K. Yonge is a K-12 laboratory school that is formally a department of the University of Florida's Department of Education. Approximately 900 students are served by the school; they range widely in ethnicity and socio-economic status, representing populations associated with the University, the local agricultural community, and the seasonally varying population of migrant workers.

Because of the school's affiliation with the University of Florida, there has been a longstanding involvement with computer-based education (dating back to 1969). Until 1973, use of computers was mainframe-based, using time-sharing terminals. Since that time, however, attention has focused more on the innovative uses of microcomputers. At this time, P. K. Yonge houses a laboratory with ten TRS 80 microcomputers, interconnected and sharing a hard-disk drive, as well as a TI 99, a Franklin, a Commodore-PET, and a Bell and Howell Apple microcomputer. There is also a special laboratory for elementary-level children, with three IBM Personal Computers used in an IBM-sponsored project to teach writing skills.

Available Videodiscs and Other Software for Basic Skills Instruction

Over the past two years, P. K. Yonge staff have become active developers of interactive videodisc materials. With the support of various agencies, projects have been undertaken to build interactive videodiscs of existing linear videodiscs in the areas of aerospace education, health education, and new and emerging technology. A list of some of these videodiscs is included in the Appendix to this Directory.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Using the microcomputer-videodisc player interface card supplied through the ViM Project, staff of P. K. Yonge have controlled their Pioneer videodisc player with both their Bell and Howell Apple and their Franklin microcomputers. P. K. Yonge staff have also interfaced the Pioneer videodisc player with a TRS 80 microcomputer, and have developed some interactive courseware for this system.

Note of Particular Interest

A number of interactive video products are now being evaluated experimentally by the University of Florida using student groups from P. K. Yonge. Results from these evaluations will be provided to AIR for Network dissemination and incorporation into ViM reports. P. K. Yonge staff have also been asked by the Florida Department of Education to design a year-long study on interactive video, using P. K. Yonge Laboratory School and another school. In addition, school staff have been asked to present a continuous interactive video workshop at the Third World Congress on Aerospace Education in Washington, D.C. (July 1983).

St. Paul Lutheran School

Rev. 12/83

Superior Street
Melrose Park, Illinois 60160
(ViM-NET Code--S24)

St. Paul Lutheran School joined the ViM Network in June 1981. A relatively small private school, St. Paul has 11 teachers and a half-time principal and serves approximately 270 students, of whom more than 70% are black or Hispanic. St. Paul is an urban/suburban, K-8 school that is maintained by a single congregation; it is largely dependent for its funding on tuition, and, as is the case with other schools, has in recent years felt the effects of declines in enrollment and in fiscal resources.

St. Paul became interested in computers after its media coordinator took a course in "microcomputers in the classroom" in the fall of 1981. To purchase the first microcomputers, students sold $5000 worth of candy and the media coordinator was able to get matching funds from a local insurance company. At the present time, St. Paul has three Apple II microcomputers, one with a double disk drive; a Pioneer videodisc player; and a printer. All hardware is housed in a central learning center that, since St. Paul is an open school, is separated from other sections of the school only by room dividers. The computer and the videodisc player are mounted on a cart and can be moved easily to areas where they are needed. Currently, microcomputers are used only by students in Grades 4-8.

Available Videodiscs and Other Software for Basic Skills Instruction

St. Paul has all the DET-produced videodiscs (the Infinity Factory and Music Is series and the KIDISC), as well as the Villa Alegre videodisc and interactive program. In addition, the school has obtained most of the software produced by the Minnesota Educational Computing Consortium, several Random House mathematics drills, and a course on the human body. St. Paul is interested in investigating other instructionally-relevant software and videodiscs.

Use of ViM Equipment and ViM-NET Electronic Mail Service

To date, the microcomputer and videodisc player have been used interactively to create a "short subject" for demonstration use.

Lafayette School Corporation

Rev. 12/83

Cason Street
Lafayette, Indiana 47940
(ViM-NET Code--S25)

Lafayette School Corporation is a district school system with an enrollment of about 7,900 students in 11 elementary schools, two junior high schools, and one high school. Schools in the district have been using microcomputers since 1978. There are now approximately 55 Apple microcomputers and six videodisc players located in media centers and microcomputer laboratories throughout the district.

Available Videodiscs and Other Software for Basic Skills Instruction

The use teachers make of the microcomputer laboratories is determined at the school level. Microcomputers are used to enrich basic school curricula, with a wide range of software in use across the district. Lafayette School Corporation began to use interactive videodisc technology following the award of an ESEA Title IV(c) grant in 1981-1982. With grant sponsorship and utilizing their own authoring system, Lafayette is producing interactive curriculum materials in economics for use at all grade levels.

Note of Particular Interest

Lafayette's ViM contact person, Joanne Troutner, is the author of "How to Produce an Interactive Video Program," published in the January 1983 issue of Electronic Learning. This article presents step-by-step instructions for creating an interactive program using videodisc, videocassette, or filmstrip.

St. Martin's School

Airline Highway
Metairie, Louisiana 70003
(ViM-NET Code--S48)

A K-12 private school, St. Martin's has 1,000 students enrolled and approximately 100 teachers and administrators to serve their instructional needs. A college-preparatory course of study is offered, and graduating students go on to either private or public colleges and universities. despite the mobility of the suburban population from which St. Martin's students are drawn, approximately three-fourths of all middle-level students matriculate to the upper level and graduate from the school. School interest in computer technology was evidenced several years ago with the purchase of 16 TRS 80 microcomputers and the linking of eight of these units into a single network by means of a single disk drive. Located in the school's computer center, these microcomputers--together with two recently purchased Northstar microcomputers, accompanying disk drives, and one printer--are used to teach computing and mathematics skills to students at all levels from Grades 3 to 12.

At the lower levels (i.e., Grades 3-5), students use the computer center for approximately one hour per day for a two-week period that provides orientation to the computer keyboard and capabilities and presents several features of programming in BASIC. Middle-level students (i.e., Grades 6-8) also receive an introduction to BASIC programming and, in addition, are shown several ways in which programs written in BASIC can help to solve mathematics problems. All students at the upper level (i.e., Grades 9-12) take a two-semester course in the computing center that covers all introductory material (e.g., for students not exposed to the lower- or middle-level courses) and, with teacher approval, allows students to develop programming skills and to explore the mathematical applications of various programming languages. At present, computer-assisted instruction in other basic skills areas is only being introduced to teachers via inservice workshops.

Available Videodiscs and Other Software for Basic Skills Instruction

All DET-produced and DET-supplied videodiscs have been received by St. Martin's. Software for instructing students in the mathematical applications of programming languages is produced by school staff.

Use of ViM Equipment and ViM-NET Electronic Mail Service

St. Martin's has been in the process of acquiring a videodisc player. Since it is one of the four ViM schools without Apple computers, its participation in the ViM Network has had to await arrival of a modem which could be used by the TRS 80 computer. With the arrival of this modem, St. Martin's staff expect to participate actively in the test of the ViM technology.

Gustavus Brown Elementary School

University Drive
Waldorf, Maryland 20601
(ViM-NET Code--S39)

Gustavus Brown is a suburban school in Maryland. There are currently 540 students enrolled in the school, which employs 24 teachers and one administrator. The school's objective in joining was to see how a microcomputer and videodisc player could be utilized in the elementary school; staff were particularly interested in learning how hearing-impaired students could use it. Prior to joining the ViM Network in September 1982, Gustavus Brown had no computer hardware or peripheral equipment; since then, it has acquired an Apple II with disk drive and monitor, a DVA-I videodisc player, and a Sears Telecaptioned television. Special telephone lines were installed to allow communications via ViM-NET.

Available Videodiscs and Other Software for Basic Skills Instruction

Gustavus Brown has received several videodiscs for use with its system. These include the University of Nebraska Experimental Disc, the Music Is series, Video Versatility, Think it Through, Language and Learning in the Home, the Infinity Factory series, Basic Tumbling Skills, KIDISC, and the ABC/NEA School Disc.

The school is developing a library of microcomputer courseware; Bumble Bee Games and Lemonade Stand are used with with younger students. Gustavus Brown has also joined SOFTSWAP in order to learn about and have access to new courseware. At present, all students in Grades 2-6 receive some exposure to microcomputer courseware.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The Apple II microcomputer is currently being used extensively at Gustavus Brown: on the average, it is used approximately 20 hours each week, by students in Grades 2-6. Students have been instructed in its use and come on a scheduled basis. Teachers have a listing of available software and schedule students according to needs during their allotted times. Fifth-grade students have been instructed in writing simple programs and using ViM-NET to send messages to other schools. An Apple IIe computer, recently purchased, has provided additional hands-on computer time for all students in Grades 1-5. The videodisc player is used less often, only about three hours each week, and it has so far only been used with 4th and 5th Grade students. The equipment is located in the school's media center.

Several inservice workshops, including hands-on experience, have been provided for teachers. ViM-SCRIPT programs are still in the developmental stage, but staff have found ViM-NET useful for sending messages to other schools.

Kenilworth Elementary School

Kembridge Drive
Bowie, Maryland 20715
(ViM-NET Code S12)

Kenilworth Elementary School, a suburban school in Maryland, serves 650 students with a staff of 28 teachers and one administrator. As an original member of the ViM Project, Kenilworth's objectives addressed the use of the technology for enhancing the teaching of basic skills in reading, math, and writing.

Prior to participation in the ViM Project, the school had no computer equipment. On joining the project, it acquired an Apple II+ microcomputer, a disk drive, a Panasonic color monitor, and a DVA videodisc player, together with an Allen interface card and an AppleCat modem. A 19-inch closed-caption color television and an Apple graphics tablet were also purchased. Kenilworth has since added a printer and a Commodore Vic-20 system.

Available Videodiscs and Other Software for Basic Skills Instruction

The music teacher at Kenilworth has made good use of the Music Is videodisc series, and many classroom teachers are using the National Geographic "Whales" disc in their science programs. Kenilworth also has the Infinity Factory series, KIDISC, University of Nebraska experimental discs, and Villa Alegre.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Grades 4-6 use the microcomputers at least 30 hours per week, primarily for writing their own programs in BASIC. There is virtually no "down time" for the computers. Many parent volunteers have helped supervise the computer center and teach programming skills to students. Student computer time is tightly scheduled throughout the day. Students are regularly given printouts of their programs so that they can "debug" and continue working on them between times when they can use the computer. Some of the student programmers have interfaced computer graphics with their videotaped school news program for an interesting effect.

Kenilworth staff have used the ViM-NET electronic mail service for downloading available programs and get hard copy of their mail from their printer.

Rock Creek Forest Elementary School

Grubb Road
Chevy Chase, Maryland 20815
(ViM-NET Code S11)

Rock Creek Forest Elementary School is a small suburban school located on the outskirts of a major urban area. It currently serves 320 students and has twelve classroom teachers and one administrator. Rock Creek has been a participant in the Vim Project since spring of 1982. At that time, it had no computer hardware or peripheral equipment at all. Staff saw in the ViM Project an opportunity to explore the use of computer technology as a tool for teaching basic skills, to see if it was useful, and to see if educators would use it. Through the project, they have acquired an Apple II microcomputer, with disc drive, and a DVA-I videodisc player.

Available Videodiscs and Other Software for Basic Skills Instruction

Rock Creek Forest is using the Infinity Factory and Music Is videodisc series, the KIDISC, and a series of experimental discs. In addition, it has purchased one interactive videodisc-microcomputer program on punctuation.

The school has acquired approximately ten sets of Apple software materials, mostly in the area of math. Staff also use several of the programs available on ViM-NET. These materials are used regularly by students in Grades 4-6--approximately 100 students in all. Some primary grade students have also used the Apple materials; at the primary level, however, children mostly use the materials in class groups.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The interactive videodisc-microcomputer system was first used at Rock Creek Forest in May 1982. The microcomputer has since been used fairly extensively in the upper grades, with usage averaging approximately 20 hours per week. The videodisc player is used less extensively, about ten hours per week; however, it is used by students in all grades. The equipment is operated through the school's media center, on a sign-up system. Group lessons are offered through the media center, both for classes as a whole and for particular skill groups. In addition, students also have "computer time," during which they are allowed to select and use any software they choose.

Rock Creek Forest staff are looking forward to using ViM-SCRIPT to develop their own lessons. They believe ViM-SCRIPT will be helpful and easy to use, though they have some concern about finding the time to use it.

Staff at Rock Creek Park were not able to use ViM-NET until December 1982, as the telephone lines were not installed until then. Since the lines were installed, however, they have logged on approximately once a week, and feel that they should be using it even more. Most of their usage to date has involved sending messages, which they report doing "regularly."

Note of Particular Interest

The ViM contact person at Rock Creek Forest reported that, at the start of the project, she was "not at all computer literate", and did not much care to learn to be (having never before touched a computer). Now, she reports spending every waking moment at her own personal computer and, when she can get at it, the school's microcomputer.

Ann Arbor Public Schools

Rev. 12/83

South State Road
Ann Arbor, Michigan 48106
(ViM-NET Code--S38)

The Ann Arbor School District serves 15,000 students, with facilities including 26 elementary schools, five intermediate schools, and three high schools. Nearly 300 microcomputers are in use throughout the district. Commodore-PETs predominate in the elementary grades; Apple and TRS 80 microcomputers are most prevalent at the upper grade levels. As a "university town," Ann Arbor is the home of many technologically-oriented parents, and their interest in computing has been one important factor underlying school efforts to utilize microcomputers.

Available Videodiscs and Other Software for Basic Skills Instruction

Microcomputer software at the elementary level is chosen mainly to develop computer literacy. LOGO is also used to develop fundamental programming concepts. At the intermediate and high schools levels, microcomputers are usually located in learning laboratories. They have been used to teach word processing, and the district is beginning to use them to teach topics in advance placement science courses.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The Ann Arbor School District's interactive video equipment includes a Pioneer videodisc player and the interface equipment supplied through the ViM Project. Staff use the videodiscs supplied through the ViM Project as well as a videodisc published by the National Geographic Society. Interactive video is now used primarily for demonstrations within the district. Staff have decided to pursue use of this technology by first developing their own authroing system.

AERS Project

Littlefork, Minnesota 56653
(ViM-NET Code--S37)

The AERS Project in Littlefork was a school-based organization formed to aid rural schools in the establishment of "learning centers" where students could direct their own instruction. Twelve operating learning centers were established by the project. With the exception of one center in North Dakota, the work of the project was located in rural Minnesota. The AERS Project aimed to help schools generate and maintain a broad-based curriculum, despite declining enrollments and shrinking budgets. To do this, media-based courseware was purchased by participating schools in curricular areas of interest. Using this courseware with a microcomputer management system that permits students to develop their own learning contracts, a small learning center staff could manage a large number of students.

Available Videodiscs and Other Software for Basic Skills Instruction

Microcomputer equipment is an essential part of learning centers for self-directed study. Not only do computers make management of many learners possible, but they are an important medium of instruction. The AERS Project relied heavily on computer materials developed by the Minnesota Educational Computing Consortium.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Use of interactive videodisc technology was limited to demonstrations of its potential. None of the centers that the AERS Project helped to establish has elected to purchase videodisc players. This was largely due to the fact that it was difficult to justify the expenditure, given extremely tight school budgets, when so little courseware seemed available. More important to project staff was the ViM-NET mail and message facility, which permited communications with others interested in microcomputer-videodisc instruction.

Edina Public Schools

Rev. 12/83

Normandale Road
Edina, Minnesota 55424
(ViM-NET Code--S52)

Edina Public Schools joined the ViM Network early in the spring of 1982. Two hundred microcomputers and several printers were then and are now being used for instruction in the four elementary, two junior high, and one high school that serve the district's 6,000 students. A suburban district located in a relatively high socioeconomic area, Edina has responded quickly to the urgings of the parents of its students that new educational technologies be integrated into the school's instructional programs. The district's microcomputers are situated both on a permanent basis in each of the elementary schools (i.e., in each school's "student support center," which provides special skills instruction--such as computer literacy courses) and in microcomputer laboratories that move from school to school and provide instruction in basic skills areas. The modem is kept in the district Media Services office for ViM-NET communications.

Available Videodiscs and Other Software for Basic Skills Instruction

Edina has all the DET-supplied videodiscs and also has obtained "Julia Child: Quiche Lorraine and Company," produced by the NEA/OEA/EEA videodisc project; "Master Cooking Course," with Craig Claiborne and Pierre Franey, produced by Optical Programming Associates; Art Awareness Collection, from the National Gallery of Art, produced by MCA Disco; and Rodger's and Hammerstein's "The King and I," by Magnetic Video.

Since the ViM unit was moved to one of the elementary schools, some teachers have begun to use the Infinity Factory materials with their classes. In addition, the school's music teacher plans to incorporate parts of the Music Is series into the curriculum, and Spanish teachers are considering Villa Alegre for use in their classes. To date, one interactive script is being developed using ViM-SCRIPT (see below).

The district's basic skills software has been obtained almost exclusively from two sources: the Minnesota Educational Computing Consortium and a former district curriculum coordinator who now is head of his own educational software concern--Micro-Ed Inc. Edina's ViM contact person has a high regard for the Micro-Ed products they have purchased and for those that their former curriculum coordinator developed while still with the district. (ViM Network members may wish to contact Tony Esbensen of Micro-Ed, Edina's former Curriculum Coordinator, to obtain a catalog of available products--(612) 929-2065). Additional software for word processing and computing skills has been purchased from Commodore (for use with Commodore-PET micros) and is used with elementary and junior high school students.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The wife of one of the technicians working in Edina's audiovisual services office heard about ViM-SCRIPT and is the first at the site to develop a script, or lesson, using videodisc and microcomputer. Using the Julia Child videodisc, she is excerpting frames and writing text and questions to create a program that can be shown to nursing staff at a nearby health facility. The interactive program will be used to show off what ViM-SCRIPT can do and to encourage others to give it a try.

Although some hardware difficulties were encountered the first few times media staff attempted to use ViM-NET, they now make it a habit to use the system every Thursday to read their mail, download programs that have been made available by other users; and send messages to other schools.

Independent School District #100 Rev. 12/83

Wrenshall, Minnesota 55797
(ViM-NET Code--S40)

Minnesota's Independent School District #100 joined the ViM Network approximately a year ago. A small, rural, single-site district, Independent has approximately 400 students in grades K-12, 27 teachers, a superintendent, and elementary and high school principals. Independent bought its first computer when the principal heard about the economics package produced by the Minnesota Educational Computing Consortium (MECC) and thought it would be interesting to look into. The district superintendent has consistently supported the project, and the district has purchased three more Apple microcomputers in the past year. Independent now owns a total of seven Atari 400s, four Apple IIs, one printer, and one Pioneer videodisc player, purchased for the ViM project.

All the hardware at Independent is housed in a "computer room," next to mathematics classes. Teachers may sign up to use the room during the day, or a computer may be moved to a classroom on a temporary basis; after school hours, the room is kept open so that students may use the computers on their own. In all, the district estimates that approximately half of its students use its microcomputers during a typical school year, while a "core group" of around 20 interested students use the equipment consistently.

At the elementary level, teachers currently bring classes or parts of classes to the computer room primarily on a "reward" basis. Computers are not yet used in basic skills instruction, but Independent plans to begin K-6 instruction in programming and computer literacy in the near future. High school students may take a course in computer programming; computing and higher mathematics classes are shared with a high school in a neighboring district that has its own microcomputers.

Available Videodiscs and Other Software for Basic Skills Instruction

Independent has all the DET discs and the Villa Alegre package. The district has also obtained most of the MECC-produced materials but does not have the accompanying documentation. Budget shortages have prevented district staff from actively seeking commercially-produced videodiscs to purchase. This situation may change for the better, however, in the near future. Independent's computer teacher has, however, written several programs designed to teach grammar to elementary school students and hopes to have time to write more programs in the future.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Some interactive use of the Apple microcomputer and Pioneer videodisc player has been attempted; several months ago, Independent's computer teacher began a program in ViM-SCRIPT based on one of DET's Infinity Factory discs, but lack of free time has prevented his completing it. In addition, Independent has used the ViM-NET electronic mail service extensively, both to send and receive messages and to access the ViM newsletter.

Mid-State Educational Cooperative Rev. 12/83

N.E. Second Avenue
Little Falls, Minnesota 56345
(ViM-NET Code--S41)

The Mid-State Educational Cooperative is a school district without students that serves five nearby school districts with a total student population of approximately 7,000. The largest of these districts includes Grades K-12 and has an enrollment of about 4,000 students, while the smallest district enrolls only about 600 students in Grades K-12. Mid-State joined the ViM Network about one year ago for the purpose of improving the instructional capabilities of the resource rooms located in each of the five districts (there are five resource rooms in all).

Each of the district resource rooms is equipped with one Apple II microcomputer, and each district has as many as 20 additional Apples. In addition, Mid-State is acquiring several new Commodore 64 microcomputers, which it plans to install in a networked configuration to teach business and office skills. Mid-State uses 30 Apples to provide support services to the districts.

Available Videodiscs and Other Software for Basic Skills Instruction

In addition to the DET-produced videodiscs, Mid-State has used the economics videodisc and microcomputer software produced by the Minnesota Educational Computing Consortium (MECC) in one inservice workshop and has provided these materials to each of the five resource rooms. They are currently trying to learn more about and eventually obtain the trigonometry course being produced by Osseo Public Schools (another Network member).

Since the resource rooms are expected to provide a variety of instructional materials for use by students and, in addition, Mid-State has the responsibilities of assisting the five districts with vocational and special education programs, a variety of software is available. Remedial basic skills materials published by Milliken are considered to be very good and programs in spelling, vocabulary, and calculus are used with gifted and talented students. Perhaps the most interesting "find" is Mid-State's use of foreign language instructional software produced by WIDA of London, England. With the current exchange rate, the cost of the German curriculum, for example, is approximately $400-$450.

In one pilot project, a study unit is being developed to incorporate National Geographic's "Whales" videodisc. A set of supplementary materials, and of instructions for using them, has been developed to complement the videodisc. Since the "Whales" disc is internally interactive, a computer hook-up is not used.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The MECC-produced economics courseware is used "all the time" and in both the resource rooms and classroom settings. Given the content of this material, senior high school students are the most typical users of the courseware, and district test results have shown promising gains in student comprehension in the subject area. Students also enjoy using the interactive courseware.

AIR/ViM staff worked closely with Mid-State to get them "on-line," and the school made connection to the network during 1983.

Note of Particular Interest

Mid-State Educational Cooperative is now involved in developing a computer-assisted instructional course in drivers' education. These materials should be available to other schools by this coming fall. In another pending grant application, Mid-State is proposing to develop resource materials for vocational training in agriculture. If this project is funded, a series of Apple diskettes will be prepared containing instructional materials on topics ranging from livestock raising and horticulture to agribusiness and sprays and insecticides. In addition, Mid-State has applied to be one of 10 Minnesota schools to participate in a pilot program to videotape satellite-transmitted educational television programs. Taped materials would then be used to develop interactive instructional programs.

Minneapolis Public Schools

Rev. 12/83

N.E. Broadway
Minneapolis, Minnesota 55413
(ViM-NET Code--S42)

The Minneapolis Public School District is the largest district in Minnesota, including 45 elementary schools and 15 junior and senior high schools. District administrators are strongly committed to the use of microcomputer technology for education, and have embarked on a five-year plan of teacher training and software evaluation and adoption. The district has elected to purchase Apple microcomputers. More than 500 are now in regular use.

The use of interactive videodisc technology is of growing interest to district staff. Staff were already aware of the potential of this technology, in part through the activities of the Minnesota Educational Computing Consortium (MECC), when they were invited to join the ViM Network during the 1981-82 school year.

Available Videodisc and Other Software for Basic Skills Instruction

The district's collection of videodiscs is presently centered around the set supplied by DET. These are in continual use as part of an inservice teacher training program throughout the district, and several additional titles of educational videodiscs supplied by ViM members are currently being previewed and added to Minneapolis' film/video catalog. A wide variety of microcomputer courseware is being used for student instruction, with the main instructional objectives being computer literacy and curriculum support. All computer software is evaluated through a district learning materials process.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Extensive use of the ViM interactive video eqipment is scheduled throughout the district for the remainder of the 1982-83 school year. Teachers have responded to the technology with such enthusiasm that district administrators have decided to develop their own interactive video materials. Three Gentech interfaces have been ordered, which will connect Apple microcomputers with videodisc players.

District staff have recently begun to use the ViM-NET electronic mail service, and have contacted other Network members to exchange ideas and information. Although the greatest value of ViM project participation to date has been the access to hardware and videodiscs with which to demonstrate interactive video, staff expect that the use of the mail network will become increasingly important as an invaluable means of exchanging ideas and resource information with other schools and districts.

Minnesota Educational Computing Consortium

Broadway Drive
Saint Paul, Minnesota 55223
(ViM-NET Code--S53)

The Minnesota Education Computing Consortium (MECC) was created by joint agreement of Minnesota's four public education systems (State Department of Education, Community Colleges, State Universities, and the University of Minnesota) in July of 1973. Its mission is general: to coordinate, facilitate, and provide computer services to students, teachers and administrators. MECC has three divisions: Instructional Services, Management Information Services, and Special Projects. Together, their efforts range from the development of new hardware and software to the maintenance and operation of a mainframe-based time-sharing system to the provision of student-level management information for all Minnesota schools. MECC receives funding for these activities from multiple sources. The development of new products is most often funded through grants and contracts, while the support for provision of management information is allocated by the state legislature.

Available Videodiscs and Other Software for Basic Skills Instruction

MECC has been a pioneering institution in the national movement to promote microcomputing in schools. Having recently placed its 5,000th Apple microcomputer in Minnesota schools, MECC is actively involved in developing new software for these computers and in evaluating software developed by others. Through a network of regional teacher-trainers and "trainer-trainers," MECC staff have had substantial impact on the level of computer literacy of educators throughout the state.

Use of ViM Equipment and ViM-NET Electronic Mail Service

One of the objectives of MECC's Special Projects division has been to investigate new technologies. Interactive video technology has been a natural area of interest. MECC staff received a grant in 1979 to begin the development of a course in economics using interactive videodiscs and microcomputers. Their goal was to create five units (which would include videodiscs, microcomputer diskettes, and supporting text materials) that would approximate a semester-length high school course. The first of these units is now being pilot-tested in seven Minnesota sites. Production of other units is underway, and by the end of the summer, two units will be ready for distribution.

MECC Special Projects staff see the greatest value of the ViM network in enabling them to keep abreast of the activities of others involved in educational technology. Because MECC is not a school itself, staff have relatively few occasions to use the ViM interface equipment for regular instruction or demonstration purposes.

Mound West Tonka High School Rev. 12/83

Sunnyvale Road
Mound, Minnesota 55364
(ViM-NET Code--S43)

This suburban high school, located on the outskirts of Minneapolis, has a student population of approximately 1000 and a staff of 55. Interest of school staff in microcomputer technology did not develop until the fall of 1981, but since that time, 22 Apple microcomputers with peripherals including disc drives and printers have been acquired. Increasing computing activity within the high school has been paralleled by growing district-wide enthusiasm for computer-based interactive instruction.

Available Videodiscs and Other Software for Basic Skills Instruction

Most of the microcomputers at Mound are located within a laboratory where they are used to teach students accounting, word processing, and mathematics. Instruction in mathematics is based on the materials developed by the Minnesota Educational Computing Consortium (MECC). Mound has also arranged with a nearby community college for a programming course to be located in this laboratory during non-school hours. Nine faculty members and sixteen community members have enrolled.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Despite the fact that Mound staff have not made use of the ViM Network for mail and messages, the opportunity to do this in the future is seen as important.

Osseo Public Schools

93rd Avenue, N.W.
Osseo, Minnesota 55369
(ViM-NET Code--S26)

Osseo Public Schools is a suburban district comprised of 20 schools (15 elementary, 3 middle, and 2 high schools) that is experiencing enrollment increases at all levels. The district currently has approximately 100 Apple II microcomputers in use, with one or two units at each elementary school and the remainder located within middle and high school computer classrooms. Two Apple II microcomputers, one Pioneer videodisc player, and a printer constitute the ViM unit in Osseo. Osseo Public Schools has been active in both the development of microcomputer software and the production of videodiscs, and the district has a broadcast-quality videodisc studio that has contracted with both the Minnesota Educational Computing Consortium (MECC) and the Minnesota Council for Quality in Education. To date, the studio has produced the Apostrophes videodisc, a videodisc on economics, and the Punctuate It! disc. An interactive videodisc on trigonometry is currently in the design stage, as is a second economics videodisc that will be interactive with a microcomputer.

Available Videodiscs and Other Software for Basic Skills Instruction

All the DET-supplied videodiscs have been used in Osseo and have been loaned to schools outside of the district. (The ViM Network contact in Osseo has requested a second set of these videodiscs precisely because they are usually on-loan elsewhere!) The district also uses the videodiscs it has produced and has obtained copies of Go for the Green (an interactive golfing videodisc produced for Ford dealers) and The Puzzle of the Tacoma Narrows Bridge Collapse (available from Wiley Publishing). All software produced by MECC is available to Osseo Public Schools for $5 per diskette and is extensively used. Cost constraints have limited the use of other commercially-produced software within the district. At one time or another during the school year, approximately one-half of all enrolled students are exposed to basic skills instruction via microcomputer.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The ViM equipment in the district has been used extensively, and both the Whitney "Insight" and Apple "Super Pilot" authoring systems, in addition to ViM-SCRIPT, have been used to produce instructional programs. Several efforts have been made to encourage teachers to experiment in writing interactive programs; however, there is little incentive beyond their own interest for teachers to put in the extra hours outside the classroom to develop courseware. This is especially true since there is only one videodisc player available in the district. Despite a busy work schedule, the ViM contact person in Osseo has used the ViM-NET facility to send and receive messages and plans to download and try out several of the BASIC programs currently stored online.

Note of Particular Interest

Osseo Public Schools has expressed interest in working collaboratively with AIR/ViM staff and other Network schools to design, test, and produce for general use a videodisc-microcomputer science curriculum for the elementary grades.

Ortonville Public Schools, a neighboring district, has made considerable advances in the use of microcomputers for school management and basic skills instruction--particularly in the area of special education, where voice synthesizers are used. The trigonometry videodisc, currently in the design stages, will be a collaborative project involving Ortonville and Osseo Public Schools.

Roseville Public Schools

Rev. 12/83

Districts Library Materials Center
West County Road D
Roseville, Minnesota 55112
(ViM-NET Code--S46)

A suburban school district in southeast Minnesota, Roseville Public Schools was already heavily committed to the educational use of computers when it joined the ViM Network a year ago. Two high schools, two middle schools, and five elementary schools serve approximately 7,000-8,000 students; all schools are equipped with microcomputers (Apples, Ataris, and Commodore-PETs), and more acquisitions are planned. Hardware owned by the district includes 20-23 microcomputers in each high school, approximately ten in each middle school, and five or six in each elementary school, with up to eight stations on each microcomputer. Each school has at least one printer; in addition, Roseville has one Pioneer videodisc player.

At the high school level, most of the microcomputers are assigned to specific departments (e.g., mathematics, science, business education, industrial education, special education); others are housed in a central media center. Roseville's commitment to computers is such that almost any department requesting a microcomputer will receive one. In addition, each high school has at least seven printers.

In the middle and elementary schools, microcomputers are located in media centers, which are usually set up in the libraries. At the middle school level, computers are used primarily in mathematics courses; in the elementary schools, they are also used in enrichment programs and in programs for accelerated students. In addition, they are used for some remedial work. All students have access to the microcomputers. In a typical school serving 700 students, 150 may use them in one day, although use varies with school, teacher, and class.

Available Videodiscs and Other Software for Basic Skills Instruction

Roseville has most of the DET-produced videodiscs (e.g., the Infinity Factory series and the KIDISC), as well as some commercially-produced discs (e.g., Jane Goodall on wild hyenas; discs on tennis and swimming). In addition, several "movie" discs have been purchased. Roseville is involved with the Minnesota Educational Computing Consortium (MECC), and plans to try out the MECC economics course in the near future. Other MECC software, including an authoring system, is being considered. The district also is in contact with the Minnesota State Department of Education, which is developing elementary software for interactive use.

As is the case with most school districts, Roseville is feeling the pinch of budget cutbacks. The reduction of funds has curtailed somewhat the acquisition of commercially-developed videodiscs and software; schools therefore go to MECC for almost all their software. In addition, staff cutbacks have resulted in teachers not having much release time to develop the necessary expertise to write their own programs and courseware or to use the microcomputers and videodiscs interactively. In short, the district finds itself in the position of having more computers than teachers who know how to use them. The district does not currently have the staff to experiment as much as it would like with the new technologies.

Rothsay Public School

Rev. 12/83

Rothsay, Minnesota 56579
(ViM-NET Code--S47)

Rothsay Public School is a small, single-site disrict in rural Minnesota. Its 225-230 students, primarily the children of the Red River Valley's big farmers, include approximately 100 7th through 12th graders, with 125-130 students enrolled in grades K-6. The district joined the ViM Network during the last year. Rothsay became involved in computers when its former superintendent took the lead in introducing them into the school; that superintendent left the district without communicating much with other staff about his activities and plans for the future, but his replacement has now succeeded in catching up with what he was doing. The new superintendent is committed to exploring the educational uses of computers in the schools, and he has found an ally in a school board member who is a former systems analyst.

When Rothsay joined the Network, it had one Apple II microcomputer and a printer. Currently, its hardware includes two Apple IIs, both with printers; one Pioneer videodisc player; two Atari 400's; and one TRS 80. The ViM hardware--an Apple II, a printer, and the Pioneer videodisc player--is housed at present in the school's office, but will be moved to the new computer room when it is completed. The units are mobile, and can be moved easily to classrooms when they are needed. At least half of Rothsay's students have been exposed to the microcomputers, including all of the elementary students; computer use at the high school level, however, has declined since the departure of the computer teacher.

Available Videodiscs and Other Software for Basic Skills Instruction

Rothsay has three of the DET-produced Infinity Factory discs, as well as the KIDISC. The videodisc player has been used interactively by teachers with the MECC Economics course. In addition, Rothsay has a number of MECC-produced materials for basic skills instruction.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Due in part to the confusion resulting from its change of superintendents, Rothsay has so far not succeeded in utilizing any of the ViM software, but it is very much interested in expanding its curriculum through the ViM project. Although Rothsay's early attempts to log onto ViM-NET were thwarted by the eccentricities of its telephone system (whenever any other phone in the school's office was lifted, the computer's connection was broken!), the problem has now been isolated and resolved.

Minot Public Schools

Rev. 12/83

Magic City Campus
Minot, North Dakota 58701
(ViM-NET Code--S22)

Thirteen elementary, three middle schools, and one high school with two campuses (Grades 9-10 and 11-12, respectively) make up the Minot Public Schools system. Serving a total of 8,000 students drawn from one of the four economic centers of North Dakota, this school district was one of the first districts to utilize an Apple II microcomputer for instructional purposes. Today, about 75 Apple II microcomputers are available for student use, with 30 at the elementary level, 15 at the middle schools, ten at the 9th and 10th grade high school campus, and the remaining 20 microcomputers located at the 11th and 12th grade high school campus. Printers are available at the middle school and high school levels.

When Minot joined the ViM Network, during the 1981-82 school year, the district's one videodisc player (a Magnavox) was located at one of the middle schools. For this reason, and because of the interest expressed by one teacher at the school in learning more about the capabilities of new educational technologies, the ViM unit was located at the middle school. In 1982-83, however, this teacher left the district, and contact with the ViM Network became the responsibility of a mathematics instructor at the 11th and 12th grade high school campus. While the Allen interface and telephone modem can be moved to the new site, and any one of several Apple II microcomputers might be used there, the videodisc player cannot be moved from the middle school. At present, AIR/ViM staff are working to find a way to help solve this temporary setback.

Available Videodiscs and Other Software for Basic Skills Instruction

It was planned that the DET-produced videodiscs would be inventoried and moved to the high school campus shortly after school reopened in January. No other videodiscs have been obtained for use. Almost all microcomputer software used for basic skills instruction is obtained from the Minnesota Educational Computing Consortium. For the elementary grades, additional software is purchased from Apple (e.g., Sesame Street diskettes) and from The Learning Company. At one time or another during the school year, all students in the elementary grades are exposed to instruction via microcomputer. At the middle school level, about one-half of the students use microcomputers in their mathematics classes. And about one-half of the students in Grades 9-12 are exposed to microcomputer instruction in programming and word processing classes.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The videodisc player and the Apple II microcomputer are not used interactively at the present time. Moreover, due to the change in district contact persons and the need to relocate ViM Network equipment within the district, there has been no use made of the electronic mail service since the 1982-83 school year began. Special efforts are being made to provide technical assistance and help with the transfer of ViM equipment from one school to the other, and it is expected that Minot Public Schools will shortly utilize the ViM-NET service.

Herkimer Planetarium/BOCES Rev. 12/83

Gros Boulevard
East Herkimer, New York 13350
(ViM-NET Code--S21)

The Herkimer Planetarium has been providing educational programs for students in 13 rural, upper New York state school districts since 1974, when the Board of Cooperative Educational Services (BOCES) funded construction of the facility. In addition to the Planetarium, BOCES funds built machine, electronic, auto body, air conditioning, and welding shops and a computer instruction center.

Staff of the facility, which serves schools in Herkimer, Fulton, and Montgomery Counties, have been national leaders in the development of elementary and secondary school microcomputer and interactive videodisc technology. Staff have developed microcomputer courseware, teacher training and student instructional programs, videodisc programs, and even their own microcomputer-videodisc interface, which predated nearly all commercially available interfaces.

Available Videodiscs and Other Software for Basic Skills Instruction

Herkimer efforts to enhance basic skills throughout the districts served have been through a teacher training program called Micro Seed. As part of this program, microcomputers have been loaned to schools with the objective of instructing teachers in the operation (and to some extent programming) of the machines. Since 1980, 200 teachers have participated in this program, roughly 20 percent of the teacher population of the districts.

Although the Herkimer Planetarium Micro Seed program has effectively disseminated computer technology from the Planetarium facility to the schools, the Planetarium is just beginning to explore a similar effort for interactive videodisc technology. Presently, microcomputer-videodisc equipment is only available within the Planetarium. However, staff are now constructing a "learning and review console" (LARC), comprised of a Pioneer videodisc player and a Commodore-PET microcomputer, which they will try in the schools.

Each year, Herkimer publishes a guide to software reviews for teachers in the districts served. Microcomputer software purchasing decisions are made at district or local school levels. Most of the microcomputers in districts (approximately two-thirds of them) are used to provide remedial instruction in basic skills to elementary school children. The remainder are used primarily at the secondary level to teach students computer programming.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Herkimer staff have purchased Commodore-PET computers nearly exclusively. As a result, they have not until recently had the Apple-based videodisc interface cards and modems available to them. Their benefit from Network participation has thus been limited to use of ViM Project-related videodiscs and to the project newsletter they have received. However, ViM software for the Commodore-PET microcomputer has now been developed sent to Herkimer, along with the required hardware for its use.

Kenmore Public Schools

Colvin Boulevard
Kenmore, New York 14423
(ViM-NET Code--S30)

Located just outside of Buffalo, New York, Kenmore Public Schools is a twelve-school district with a current enrollment of 10,500 students. This suburban district has experienced enrollment declines, but seven elementary, three middle, and two high schools continue to serve the student population. When it joined the ViM Network, Kenmore had approximately 35 TRS 80 Model III microcomputers, several printers, and one Magnavox videodisc player. Its objective was to try out what seemed a fascinating educational tool and, if it proved a successful means for assisting teachers and students, to train teachers in the use of the equipment and purchase additional hardware. Entry into the Network was prompted by a contact from the New York State Department of Education.

Available Videodiscs and Other Software for Basic Skills Instruction

All DET videodiscs except the KIDISC have been received and are shown in the Kenmore schools. In addition, some energetic searching has turned up approximately one dozen additional videodiscs. Some of these videodiscs are commercially-produced movies that have been found suitable for instructional purposes. Others are "Smoking: How to Stop," videodiscs on cardiopulmonary resuscitation (CPR) and first aid practices, "The Art Awareness Collection from the National Gallery of Art," "Better Tennis in 30 Minutes," and "Swimming: Freestyle and Backstroke." Kenmore also uses 25-30 software programs with their current stock of 70 TRS 80s and 12 printers. A number of these are on cassette tapes, but some diskette programs are also used. Math skills, BASIC programming, time management exercises (e.g., Author 1), word processing (e.g., Scripset), and guidance materials are among the available software packages, and students in gifted and talented classes, high school vocational education and programming classes, and guidance centers use the software regularly.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The TRS 80 microcomputer-Magnavox videodisc player unit is stationed in one of Kenmore's gifted and talented classes. The pieces of equipment are only used separately, however, as problems have plagued the linking together of the Magnavox to the micro. The ViM contact person in Kenmore has been unable to get assistance from the local Magnavox dealer, and AIR/ViM staff are exploring whether attempts at the site should be made to link the units, with the microcomputer serving as the "remote control" for the videodisc player. This immediate problem may disappear in time, however, as Kenmore Public Schools plans to purchase approximately $300,000 in new microcomputer equipment and software and videodisc players.

Note of Particular Interest

Kenmore Public Schools is actively involved in several rather exciting activities intended to increase the district's and staff's microcomputer capabilities. The district is working along with three other districts in the area and Drs. Roy Callaghan and David Farr of the University of Buffalo to evaluate teacher-made software for basic skills instruction. This activity, which began this past winter, is aimed at improving the software libraries of schools. Kenmore is also participating in inservice activities conducted by the New York Board of Cooperative Educational Services. These include speakers and workshops on the use of interactive videodiscs for occupational education programs and the use of this medium for designing competency-based individualized instructional programs.

Oklahoma City Public Schools

North Klein
Oklahoma City, Oklahoma 73106
(ViM-NET Code--S45)

Oklahoma City Public Schools joined the ViM Network in the summer of 1982. It is a large, intercity district comprising 10 high schools, 11 middle schools, and 68 elementary schools. Although not a wealthy district, Oklahoma City Schools has about 50 microcomputers, including three to five at each high school and one in almost every middle school. Until recently, most of the elementary schools have not had access to microcomputers.

The school taking part in the ViM Project is an elementary school made up of Grades K-4 with approximately 500 students. Ten to fifteen teachers and a building principal make up the faculty and administrative staff at the school. Project equipment--an Apple II microcomputer, a Pioneer videodisc player, and a printer, all purchased for the project--is housed in a 4th Grade classroom, and, under the supervision of two teachers, may be used by as many as 50 students during the day. In other elementary schools, microcomputers have been purchased by parents; media centers are being set up in libraries or classrooms for use by as many students as possible.

Teacher interest in the use of microcomputers is high in Oklahoma City Schools, although when the project started only one of the teachers had had much experience with them. Microcomputers are used at the high school level chiefly in programming classes and in business/vocational education and mathematics courses; in the middle schools, they are used in courses aimed at gifted or talented students. Virtually all high school students and approximately 50 percent of the middle school students are currently using the microcomputers in these courses.

Available Videodiscs and Other Software for Basic Skills Instruction

Most of the DET-produced videodiscs (the Infinity Factory and Music Is series) are available at this ViM site. The district does not yet have a copy of the KIDISC, but hopes to obtain one soon. Attempts to obtain additional videodiscs have been somewhat unsuccessful to date, owing to a poor local selection of educational videodiscs; most of the discs staff have been able to find have been recreational in nature. Moreover, there have been red-tape problems: the stores offering the lowest prices on software have required payment in cash, and the district traditionally has required billing. Up to now, Oklahoma City Public Schools has not been much involved in using microcomputers in basic skills instruction; emphasis has been mainly on teaching programming skills.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Interactive use of microcomputers and videodisc players has not been possible in the district for a variety of reasons. The original impetus for joining the ViM Network came from the district director of curriculum; unfortunately, this person left the district before the project could be established, and the vacancy of that position has resulted in delays in acquiring the necessary hardware and software. The ViM site school has now received its equipment and is currently expecting a visit from the ViM contact person in the district office for help in setting up and getting to know the new system. Currently, staff are developing an interactive program.

Cal Young Middle School

Rev. 12/83

Gilham Road
Eugene, Oregon 97401
(ViM-NET Code--S29)

Located in the vicinity of the University of Oregon and one of 40 schools serving a total student population of approximately 17,000 students, Cal Young Middle School joined the ViM Network with five Commodore-PET microcomputers and one Pioneer VP1000 videodisc player. Approximately 150-200 Commodore-PET microcomputers are presently located in the 40 schools, and the district superintendent of Eugene Public Schools has requested funds for the placement of microcomputers in every classroom. The district is currently working on a school board proposal to develop a $12 million special bond issue to upgrade Eugene's efforts in computer education. While each individual school must develop its own plans and proposals for the acquisition of computer hardware, the district school board has strongly endorsed the continued use of educational technologies and the teaching of computer literacy, and is formalizing a scope and sequence for computer education. Interactive video is being explored as an inservice event for teachers, and touchscreen applications are also being studied.

Available Videodiscs and Other Software for Basic Skills Instruction

The dedicated and persistent efforts of one teacher at Cal Young Middle School (the ViM contact person), working on a small grant from the National, Oregon, and Eugene Educational Associations to provide teacher inservice with videodisc technology, have resulted in a substantial collection of videodiscs available for general classroom use within the school and throughout the district on a loan basis. Many of the discs were purchased from commercial vendors or were obtained from DET upon entry to the ViM Network, but a good many other "fugitive" videodiscs were obtained through contacts with national associations (e.g., NEA), special projects (e.g., MIT Design Project), and industrial producers (e.g., Ford Motors). A partial list of this ever-growing library of videodiscs is included in the Appendix to this Directory.

Microcomputer software for basic skills instruction at Cal Young is largely confined to cassette-driven materials and is used mainly in computer literacy, mathematics, and some science classes. Despite these limitations, however, almost one-half of the school's student body is exposed to work on the microcomputer during the typical school year.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The videodisc-microcomputer unit is portable and has been used for classroom demonstrations and teacher workshops. The lack of videodisc interface board and modem for the Commodore-PET microcomputer, however, has slowed the use of both the fully interactive application of these technologies and the extent to which Cal Young Middle School has been able to share its videodisc discoveries and project-related needs. Recently Cal Young acquired an Apple II and have been able to use ViM-SCRIPT to author an interactive program. The school's ViM contact person is now working to debug a DiscMaster 1000 Commodore interface; meanwhile, he has adopted an Apple computer and is setting it up with an Allen interface card to use with ViM-SCRIPT for demonstration purposes. The district also plans to explore the Super Pilot and Villa Alagre authoring systems.

In March, Cal Young staff finally succeeded in logging their Commodore-PET onto ViM-NET, and since then have used the electronic mail extensively. They are very much interested in exchanging information about videodisc sources and authoring concerns with other Network members; in addition, Cal Young's contact person is interested in any ideas other ViM members may have for continuing the Network in the future.

Note of Particular Interest

Cal Young Middle School is eager to work with the ViM Network in designing plans and proposals for the development of videodisc-microcomputer diskette packages for the teaching of basic skills. Already, the ViM contact person at the school has discussed various production ideas with Network staff, and a visit to AIR to begin work on possible joint proposals has been discussed.

Bethelehem Public Schools

Rev. 12/83

Lehigh University
School of Education
Bethlehem, Pennsylvania 18015
(ViM-NET Code--S23)

In the Fall of the 1981-1982 school year, Lehigh University's School of Education began a Masters Degree program in Educational Technology. As part of that program, the University donated a microcomputer laboratory (16 Apple II's with disk drives and printers) to Broughal School, a middle school within the Bethlehem Public School District. The arrangement has worked out to the advantage of both the school system and the University. During the school day, the equipment is available to teachers and students for computer-based instruction. In the evenings and on weekends, it is available to the Educational Technology program for training graduate students.

Available Videodiscs and Other Software for Basic Skills Instruction

In addition to sharing access to the microcomputer equipment, the Broughal School Lab provides the University with a test bed for instructional materials designed by graduate students, and Broughal has access not only to these materials but also to any public domain software collected by participants in the Educational Technology program. The program has been very successful, having already attracted over 100 students and several Bethlehem Public Schools staff. It is likely that the relationship between the University and the district will continue to be strongly mutually advantageous.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The Lehigh Educational Technology Program became involved in the ViM Project when University faculty decided to expand the scope of their program to include the interactive use of videodiscs. The Educational Technology Program has a DVA videodisc player, which it controls with an Apple II using the ViM-supplied Allen interface board. Using this equipment, graduate students have completed development of a program on percentages and are now working on two more programs, one on angles and one on rounding of numbers. All of these programs use the Infinity Factory series, the "Music Is" series, the Whales disc, and the NASA Space Disc, also supplied through the ViM Project. Lehigh faculty and students have expressed interest in sharing these materials with other network sites as soon as they are completed and can be distributed as a set.

Lehigh students found especially useful a ViM workshop that was conducted in the Washington, D.C. area. They indicated that it was the source of a number of ideas about how existing videodiscs could be creatively used to teach content not directly covered by the videodisc by adding microcomputer code to the videodisc information.

Rev. 12/83

Hurst-Euless-Bedford Independent School District

Central Drive
Bedford, Texas 96021
(ViM-NET Code--S13)

Hurst-Euless-Bedford is a suburban Central Texas school district serving 16,000 students. Twenty-three schools--16 elementary, 5 middle, and 2 high schools--all are equipped with microcomputer hardware drawn from the district inventory of 105 Apple IIs, 20 TRS 80s, and 15 printers. When Hurst-Euless-Bedford joined the Vim Network, it had a somewhat smaller stock of microcomputers (40 Apples and the 20 TRS 80s), one Pioneer videodisc player that was used alone to present visual material to students, and the hope of "tying in" with other schools and districts that were using interactive videodisc technology. The ViM unit (one Apple II, the Pioneer, and a printer) currently is located in the district's Special Projects office.

Available Videodiscs and Other Software for Basic Skills Instruction

Hurst-Euless-Bedford has received the complete set of DET-supplied videodiscs. They find the National KIDISC to be most useful for demonstration purposes (e.g., they have used the "Trip to the Zoo" segment in demonstrations for elementary teachers) but find the Infinity Factory and Villa Alègre series less-suited to their needs (partly because the characters and settings seem oriented toward inner city environments). The ViM contact persons at this site have been especially active in seeking out other videodiscs; for example, by following up leads in a recent issue of Popular Photography, they are tracking down a disc produced by a California-based photo company containing slides of travel sites. They have also obtained a two-page listing of available videodiscs published by Apple and have contacted several of the organizations that produce videodiscs to learn what is currently being developed.

The district has shown equal commitment to locating, purchasing, and evaluating software packages for basic skills instruction. In 1982, approximately $20,000 was spent on single copies of a variety of reading, mathematics, music, and programming packages; these are currently being tried out with teachers and students. Among the materials so far purchased are diskettes from the Minnesota Educational Computing Consortium, Arithmetic Classroom (designed for elementary-level mathematics instruction), from Sterling and Swift Publishing, and both noncopyable and copyable software from Micro-Power and Light (which allowed Hurst-Euless-Bedford to purchase and try out a set of noncopyable materials, return these, and subsequently purchase copyable sets of those materials considered most useful for the district's purposes). The district is also participating in a pilot reading program conducted by the WICAT Institute (a ViM Network member) for Grades 4-7.

Use of ViM Equipment and ViM-NET Electronic Mail Service

ViM contact persons in the district have used the ViM unit to demonstrate interactive features of the KIDISC and have located several authoring languages to link the microcomputer to the videodisc player. In addition to ViM-SCRIPT, and an authoring system they developed themselves, school staff have learned quite a bit about Pharos (produced by Independent Video Consultants and selling for about $350), Ghostwriter (produced by the New Haven-based Cavri Company), Gentech (produced by Gentech of Indiana, requiring an Gentech interface), Symtec (produced by Symtec and requiring a Symtec interface), Whitney's Insight System, and Apple's Super Pilot (both using the Whitney interface).

Hurst-Euless-Bedford has been an active user of ViM-NET and has pointed out to AIR/ViM staff several ways in which this electronic mail service can be improved. They are particularly interested in finding ways for ViM-NET to allow downloaded programs to be used without prior editing.

Note of Particular Interest

One of the district's high schools maintains a fully-equipped broadcast studio. This studio has been used to produce television programs for showing in the community.

Waterford School

Rev. 12/83

WICAT Institute
South State Street
Provo, Utah 84057
(ViM-NET Code--S28)

Waterford School is a two-year-old private institution serving 216 students in Kindergarten through Grade 8. The school, which was created as a laboratory school and a part of the WICAT Foundation, charges no tuition. It was created as an experimental school, expressly for the purpose of investigating how to introduce technology into new settings. Two broad questions are of primary interest: (1) How should hardware and software be engineered to be of maximum value? and (2) How should schools be organized to make best use of technology? The school will add at least one grade level each year until it is a full K-12 school.

Available Videodiscs and Other Software for Basic Skills Instruction

Waterford's main computer facility is a 30-terminal time-sharing microcomputer system built by WICAT. Named the Hydra System, it is capable of supporting videodisc players at each terminal, although due to the current lack of videodisc-based software, such players have not yet been connected.

Students use the microcomputer laboratory for two 20-minute sessions each day. WICAT has developed software in math, language arts, and science that is used on the Waterford system, and staff intend to increase the amount of student use of the laboratory as more curriculum materials are developed.

Barrett Elementary School

Martha Custis
Alexandria, Virginia 22302
(ViM-NET Code--S14)

Barrett Elementary School joined the ViM Network in December 1981. An urban school, Barrett serves approximately 325 students and is staffed by 25 teachers and one administrator. Barrett's aim in joining the Network was to explore and implement the use of electronic technologies as aids to instruction and to promote computer literacy in general.

Prior to its becoming a member of the ViM Network, Barrett's computer equipment consisted of a single TRS 80 microcomputer, housed in an ATP classroom. On joining the project, Barrett acquired an Apple II microcomputer with a Sears monitor/receiver, a DVA-I videodisc player, a disk drive, and a telephone modem. In addition, the school now has an Amdek monitor and a second disk drive. Project equipment, used for computer-assisted instruction and student "open time," is assigned to teachers on the basis of a weekly sign-up schedule. All K-6 classes, in "computer awareness" sessions, have been exposed to the computers and videodisc player.

Available Videodiscs and Other Software for Basic Skills Instruction

In addition to the DET-produced videodiscs, Barrett has obtained a number of the materials produced by the Minnesota Educational Computing Consortium, as well as a Radio Shack K-7 mathematics program. These materials are used in basic skills instruction by approximately 150 3rd-6th Grade and learning disabled students. Barrett's plans for the future include investigating the possibility of acquiring additional videodiscs.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Barrett staff have used the ViM-NET electronic mail service since spring of 1982; currently, the school uses it approximately once a week to send and receive messages.

Due primarily to the lack of a Panasonic monitor, which has not yet arrived, Barrett has not used its microcomputer and videodisc player interactively. When this unit is received, the school plans to begin experimenting with the ViM project interactive courseware. Although Barrett's media staff are enthusiastic about the project in general, a lack of free time has hampered their making much use of the software on-line on ViM-NET. The school's involvement with microcomputers, however, is increasing. Recently a faculty inservice session was conducted to acquaint teachers with the Apple II, and individual "hands-on" sessions are held periodically for interested teachers. In addition, the library media specialist, who had taken several university courses in the use of microcomputers in education, attended the Virginia State Microcomputer Conferences in April and September of 1982.

Note of Particular Interest

In May 1982, Barrett was selected by the Virginia State Media and Technology Director for inclusion in a multimedia program documenting the use of microcomputers in Virginia. Photographs were taken of Barrett students and staff as they used the microcomputers, and several teachers were interviewed. The product of the efforts has been seen throughout the state and is currently on loan for nationwide viewing.

Camelot Elementary School

Guinevere Drive
Annandale, Virginia 22003
(ViM-NET Code S-16)

Camelot Elementary School was one of the original Beltway Project schools and joined the ViM Network in January 1982. A suburban school in northern Virginia, it serves 569 students in Grades K-6 and is staffed by 68 teachers and staff members and two administrators. The school also houses the Camelot Hearing Center for hearing-impaired children. Prior to joining the Network, Camelot had no computer hardware or peripheral equipment. As a result of joining the project, however, it has obtained an Apple II microcomputer with a monitor and modem and a DVA I videodisc player. Recently, Camelot also acquired an Atari 800, with disk drive and printer.

Available Videodiscs and Other Software for Basic Skills Instruction

Camelot has most of the DET-produced videodiscs (KIDISC, the Infinity Factory series, and the Music Is series), as well as several others (Cheetah, Language and Learning, Think it Through, Tumbling, Video Versatility, and the NEA/ABC School Disc). Through its participation in the Beltway Project, Camelot also acquired microcomputer software, including Computers--What are They?, developed by Media Materials, Inc., and Computer Literacy, developed by by the Fairfax County Schools. This software is also being used with the ViM equipment by students in Grades K-6, with emphasis on BASIC programming for the 5th and 6th grades.

Use of ViM Equipment and ViM-NET ELectronic Mail Service

The microcomputer is being used at Camelot School to provide computer-assisted instruction in such areas as math, language arts, and science; it is also being used to teach basic programming. Use of the microcomputer has averaged from 40 to 50 hours a week. During the school day, each teacher is given certain time slots during which he or she may have students use the computer. PTA and other adult volunteers also are using the microcomputer to learn basic programming, and classes in programming are offered after school, at night, and on Saturdays for both children and adults. The trained volunteers assist with computerized instruction during the school day.

The ViM contact person at Camelot has experimented with ViM-SCRIPT and is enthusiastic about it. He looks forward to developing a demonstration lesson, or script, to show to other teachers. Because there is a strong emphasis in his county on teaching children basic programming, however, he is having trouble finding time to develop his own lessons.

Camelot staff first started using ViM-NET in October of 1982. Since then, they have logged on three or four times a week, primarily for sending messages. In addition, special education students with writing difficulties are permitted to send messages to another area school, as an incentive for improving their skills.

Long Branch Elementary School

33 North Fillmore Street
Arlington, Virginia 22201
(ViM-NET Code--S31)

Located in a suburb of Washington, D.C., Long Branch Elementary School is a K-6 public school serving 434 students and staffed by 26 teachers and one administrator. Long Branch joined the ViM Network in March 1982, with the aim of familiarizing its students and staff with the operation of the microcomputer and using the equipment as a supplement to the curriculum. Before it joined the project, the school had no computer hardware. After joining, Long Branch purchased an Apple II microcomputer with disk drive and monitor and a DVA-II videodisc player, and staff now hope to purchase a printer.

Available Videodiscs and Other Software for Basic Skills Instruction

Long Branch has received all the DET-produced videodiscs, including the Infinity Factory and Music Is series and the KIDISC, but has purchased no additional discs or interactive software. The original courseware received with the Apple is used extensively; every student in the school has been exposed to the computer, although not all students use it on a regular basis. In addition, Long Branch has ordered a number of other diskettes for preview.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Since the school's interactive videodisc system became operable in December, Long Branch staff have completed several interactive videodisc lessons which they have shared with other Network members via ViM-NET, including one designed for children with limited knowledge of English. In addition, they have students working on several projects. The ViM-NET service has been used regularly since early last summer.

Prince William County Public Schools

Tudor Lane
Manassas, Virginia 22110
(ViM-NET Code--S44)

Prince William County Public Schools, located in the Washington, D.C., metropolitan area, joined the ViM Network in the spring of 1982. Impetus for joining came from Prince William's Supervisor of Learning Resources and Educational Technology. The District has 30 elementary schools; every elementary school has at least one Apple microcomputer, and a Pioneer videodisc player was purchased to be shared among the schools. A fully-trained technical staff supports the district's use of technology.

Available Videodiscs and Other Software for Basic Skills Instruction

Prince William County has an extensive library of microcomputer software for all grade levels and all levels of instruction. The district has joined several computer libraries, including MECC, Apple Swap, Apple Puget Sound, and Softswap; a concerted effort has been made to choose appropriate software that will enhance the teaching of existing curricular objectives. Several teachers have also written programs tailored to their own instructional needs. Prince William's videodiscs include the KIDISC, National Geographic's "Whales" disc, Villa Alegre, and the Infinity Factory and Music Is series.

Use of ViM Equipment and ViM-NET Electronic Mail Service

Although the videodisc player was a fairly recent acquisition, Prince William County has explored its interactive capabilities extensively; many staff members are excited about the potential of interactive ViM courseware. District staff use the ViM-NET electronic mail service frequently, and would welcome hearing from other sites. This school system represents an excellent resource for Apple software information and evaluation.

Richmond Public Schools Rev. 12/83

J. L. Francis Elementary School
Ninth Street
Richmond, Virginia 23219
(ViM-NET Code--S49)

One of 40 elementary schools in a large urban unified school district, Richmond Public Schools' J. L. Francis Elementary School became involved in the ViM Network early in 1982. When it joined the Network, a DVA-III videodisc player was purchased (one of three purchased by the district at that time), and the school's Apple II microcomputer was designated for use on the project. The ViM unit is presently stationed in the centrally located school library which, because J. L. Francis is an open school, makes the unit easily accessible to students and teachers.

Available Videodiscs and Other Software for Basic Skills Instruction

J. L. Francis Elementary School has received and used all the DET-supplied videodiscs.

With one Apple II microcomputer in the library of each of the 40 elementary schools in the district, and both of its two high schools operating computing labs with from 10 to 14 TRS 80 and Apple microcomputers available for student use, the district is also actively pursuing the purchase of software for basic skills instruction. Up to now, the majority of the instructional programs used in the district have been locally-produced materials in the mathematics and science areas. Since the beginning of the current school year, school librarians have been screening various software packages, and ten ten-person subject-area committees have been organized to identify and screen available software packages for purchase and to establish a district-wide software selection policy. The district has been in contact with both Kenneth Komoski and Ellen Balao of the Educational Products Information Exchange Institute (which has joined with Consumer's Union to offer advice to schools on both hardware and software purchases) and has viewed an eight-hour telecast produced by Ohio State University on evaluating hardware and software for educational use.

In January, the district will begin to use the WICAT Institute's reading program with two teachers in two different schools. Already, the district has been involved in the pilot testing of WICAT-produced English and mathematics programs designed for middle school use. (The WICAT Institute is a ViM Network member.)

Use of ViM Equipment and ViM-NET Electronic Mail Service

The videodisc player-microcomputer unit at J. L. Francis has been used to demonstrate features of interactive videodiscs, such as the KIDISC, and to show videodiscs to students. In addition, the school librarian, with assistance from district media staff, has authored one interactive BASIC program designed for use in demonstrating ViM capabilities and is completing another interactive BASIC program designed to accompany the KIDISC segment, "A Trip to the Zoo." According to the district media supervisor, when the unit is working, it always attracts a crowd of students. At J. L. Francis, students have been quick to sign up for time on the unit.

Thomas Jefferson Elementary School

South Oak Street
Falls Church, Virginia 22046
(ViM-NET Code--S15)

Thomas Jefferson Elementary School was one of the original participants in the ViM Network. A small school in suburban Virginia, it serves 292 students in Grades 2-5 and employs 13 teachers and one administrator. In joining the ViM project, Thomas Jefferson sought an opportunity to involve the teaching staff in learning how to use the technology and integrate it into their basic skills instruction. In addition, they sought to have students gain at least some knowledge of basic programming concepts. Thomas Jefferson had had no computer hardware or peripheral equipment prior to joining the Network. Present computer equipment includes four Apple II+ systems, two Apple IIe systems, and one Commodore 64 system; each system includes a computer, a disk drive, and a color monitor. This equipment is housed in a computer resource room, along with a DVA videodisc player, two printers, and one 19-inch telecaptioned color television. In addition, there are seven Commodore Vic-20s in individual classrooms. Three of the Apples are on moveable carts, so they can also be transported to classrooms. Plans for the next school year include purchasing eight Commodore 64s, which will be networked together for word processing and LOGO activities.

Available Videodiscs and Other Software for Basic Skills Instruction

All of the DET-produced videodiscs are in use at Thomas Jefferson, and several others are also available, including Basic Tumbling Skills, Cheetah, the NEA/ABC School Disc, Think It Through, and Language and Learning, as well as the National Geographic "Whales" disc. The ViM contact person has already developed one short interactive demonstration script using ViM-Script, which is keyed to the Basic Tumbling Skills videodisc.

Several sets of microcomputer software are also being used at Thomas Jefferson. These include many Softswap disks, the Bumble Bee Games, the Milliken Math series, three programs developed by DET (the Villa Alegre set, the WICAT Iris Reading Program, and the Ohio State Tabs Math), and other assorted math and language disks. These materials are being used in basic skills instruction with all students in Grades 2-5.

Falls Church Schools has developed a comprehensive K-8 computer literacy program. The primary emphasis at Thomas Jefferson is on teaching children how to use the microcomputer as a tool. The LOGO software has also been acquired, and LOGO is taught to all second and third graders so that they can learn to program the microcomputer in a variety of problem-solving settings. Fourth and fifth graders also use LOGO, as well as BASIC, for programming purposes. In addition, the school recently purchased the "Bankstreet Writer," so students can use the word processor for various writing activities.

Use of ViM Equipment and ViM-NET Electronic Mail Service

The microcomputers are used an average of 30 or 40 hours each week. Having the Commodore Vic-20s in the classrooms allows students easy access to computers, and all classes, including classes in special areas, are scheduled to use the computer room for at least one 45-minute period per week as well. During class, the equipment is used to provide computer-assisted instruction in appropriate subject areas; BASIC and LOGO programming are integrated with the math objectives. Parent volunteers are available to assist students in using the microcomputers. In addition, the equipment is used by the school's Computer Club before school, and it is available for both students and teachers to use after school.

Considerable attention is being given to exploring the use of interactive courseware at Thomas Jefferson. The ViM contact person is planning to work with one of the special education teachers to develop some interactive lessons using the Infinity Factory series for use in her class. In addition, one of the other teachers has been assigned to work with the ViM contact person to explore other possibilities for using interactive courseware. They are finding, however, that time for developing their own courseware is a problem because teachers are so involved in using microcomputers alone for instructional purposes.

Staff training has been a continuing effort. The majority of teachers have had a course in BASIC programming, and a three-credit course in LOGO will be offered in the fall.

Staff at Thomas Jefferson have been using ViM-NET one or two times per week for sending messages and for downloading and uploading programs. Two students will be learning how to use ViM-WARE (the software used to access the system), and will then teach others. In particular, special education students with writing difficulties will be allowed to send messages to another area school, as an incentive for improving their skills.

Notes of Particular Interest

The ViM contact person at Thomas Jefferson reports that the project has had a tremendous impact on the community. Almost all of the staff have or are taking courses about microcomputers. In addition, the local middle school implemented a special course last fall to meet the needs of the Thomas Jefferson students.

Many other Virginia school systems have sent representatives to Thomas Jefferson to observe the school's computer program in action and to receive guidance on implementing similar programs in their own schools. Thomas Jefferson will also be a testing site for the Ohio State Tabs Math program next year.

APPENDIX D

REPRINT OF ARTICLES FROM VIDEODISC NEWS

Legislation

The Rationale for House Resolution 91

by Representative Brian Donnelly

There can be no question that the computer age is fully upon us. Information technology has changed the way that businesses and offices operate just as surely as the telephone, the typewriter, and the photocopier have combined to revolutionize commerce in the last hundred years.

The children now in our schools will graduate into an economy dependent on computer competence. Fortunately, many school districts around the country are already investing in the technology necessary to train youngsters in computer skills. Unfortunately, the computer has not always found its way into the classroom where it is most desperately needed.

Personal computers are most likely to be found in the classrooms of wealthier school districts. They represent a major investment that too few school boards have the resources to make.

A look at the school districts that cannot afford to take the necessary leap into the computer age is likely to find that a disproportionate number of them are in areas that have already been left behind by changing economic conditions: poor rural areas or the declining red brick cities that were built by the rising smoke stack industries of several generations ago—cities that have declined as their parent industries declined or moved to the sun belt.

It is the children of these areas that most need to be introduced to the tools of tomorrow in their schools. It is unlikely they will have access to computers in the home. Theirs are not the new communities built up by the high tech revolution, with computers in virtually every workplace and computer talk occasionally over the dinner table.

Federal legislation to help put computers in the classroom has already achieved wide interest and support. The so-called "Apple Bill" would provide a tax break to computer companies that provide state-of-the-art computers to schools free of charge. The legislation is sound as far as it goes. Where it may not reach, though, are the schools least able to afford by themselves to bring their students into the computer age.

This year, I have filed H.R. 91, which would allow a tax deduction to computer firms manufacturers for the units they donate to primary or secondary schools, provided that 75% of their contributions are offered to school districts that fall below the national median for family incomes. This proposal would put the computers where they are most sorely needed, in those areas where the children are in danger of being left behind by the march of technology.

Education

ViM Network

Too often good words become overused. Once a word reaches a certain status it ceases to have the concise meaning that made the word so attractive in the first place. The technological revolution represented by microcomputers and videodiscs has been one of the worst offenders. Words once precise in their meaning now mean something quite different in "computerese", which must be added to the words meaning in "bureaucratese", which must be added to what the word means in English.

One of these words is "network". In broadcasting it refers to the massive corporations and their affiliates that once dominated the communications medium. In the jargon of the computer user it can refer to either the connection of more than one terminal to a computer or it can refer to any interpersonal or inter-organizational sharing of knowledge, information, or even software. It is the latter meaning that concerns us here.

"Network", "networking" as both a noun and verb has been a word that has been used extensively with respect to large computers, and more recently the microcomputers. Needless to say that it is much more than a word, it is a process. A process by which some of its practitioners have learned to flourish and in some cases to survive. It would not be an overstatement by any means to say that networking has played a critical role in the status that technology, and particularly communications and learning technology, hold today.

What is ironic is the absence of this process in our own corner of that technological industry. Granted, there is a certain degree of sharing among competitors, but there is not networking on the scale found in other high technology industries. Possibly because the videodisc industry is so new, and most certainly because this industry's initial growth is taking place in such an adverse economic environment. Whatever the reason, networking has not yet arrived in the videodisc industry, at least not in the production sector of it. Some users have found that videodisc networking is an invaluable tool.

The Videodisc/Microcomputer Network (ViM) is a collection of 45 schools, school districts, and educational organizations throughout the country that use microcomputers as videodisc controllers to teach basic skills and other curricula. They share their knowledge, ideas, and even materials, in an effort to bring this powerful instructional tool to their respective institutions. For many of these educational institutions the ViM network is the only way that they could attempt to take on both the fiscal and programmatic responsibilities associated with the purchase and operation of a microcomputer/videodisc interactive instructional system.

(At a meeting of the Society for Applied Learning Technology last year Donald H. McLaughlin, Director of ViM offered both a rationale and a background for the ViM network.)

RATIONALE

Technological development requires feedback, and the marriage of videodisc information storage with microcomputer control is certainly no exception. This combination opens new possibilities for individually adaptive instruction in basic skills, offering opportunities for many wrong decisions as well as right ones. How long should video sequences be? How should computer-graphics be used with videodisc-generated displays? Can one videodisc be designed for use by a variety of computer programs? Although we can use logic to address these questions, the answers, as well as new, overlooked questions, will come only from experience. This project is designed to accumulate experience and to analyze it to provide guidance for future development of videodisc/microcomputer (ViM) technology.

There can be no question that this technology brings new capabilities to the classroom. With a microcomputer alone, one can generate a few dozen high resolution pictures from information stored on a floppy disk, while one side of a laser videodisc holds over 50,000 individually addressable frames. One can imagine whole courses stored on a single videodisc, lectures sharing space with visual simulation feedback that will be used for exercises run under control of a computer program. The program itself may be packed densely into a few frames of the videodisc.

There is a distinct drawback of ViM technology in its present form, however. Unlike writing a computer program, which can be done by a teacher in a few hours using new authoring languages, creating a videodisc is "high technology," to be done rarely, and not iteratively as one works out the "bugs." Thus, unlike computer courseware, we are not likely to see local school districts and teachers' colleges developing numerous videodiscs for personal use and experimentation. In the future, "mastering" a disc may become routine, but it is not, using the present technology. This is an especially critical problem in these early developmental stages of the technology, because there are so many wrong ways to implement videodiscs. Therefore, squeezing as much information as possible from each application of ViM in the classroom is crucial for its successful emergence as a practical addition to basic skills teaching methods. Thus, the ViM network project aims to provide assistance to schools that want to try the new technology so that it can be "formatively" evaluated.

OBJECTIVES

In order to provide the information for making decisions on the development of ViM technology, the U.S. Department of Education set up a project to:

(1) identify schools across the country that have made a commitment to technological improvement of basic skills instruction, where the ViM technology would receive a fair and valid test;
(2) facilitate use of the technology in these schools, through
    (a) establishment of an on-line network, and
    (b) equipment support; and
(3) collect and report information on use of the technology and on the strong and weak points of specific ViM courseware.

Identification of Schools

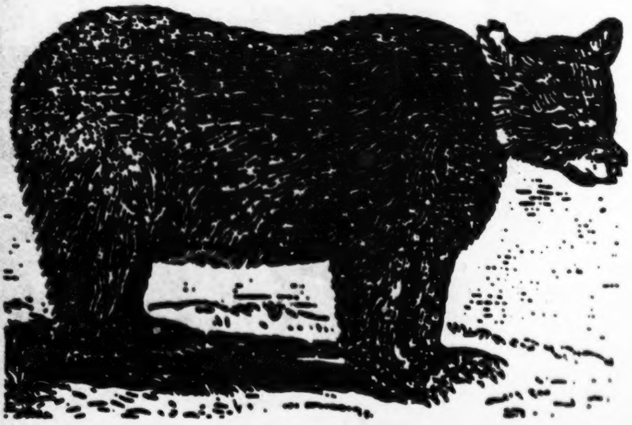
Schools selected for this project will play a key role in the future directions of ViM technology, so they have been chosen carefully to provide both a fair test of the technology and a basis for extrapolating conclusions to schools across the country.

The first concern was that the schools have an existing base from which to develop a program of usage of ViM technology. This led to inclusion of the criterion that participating schools should already have possession of a laser videodisc player and a microcomputer of sufficient capacity (48K with disk drive) to run existing educational courseware. For 15 schools in Maryland, Virginia, and the District of Columbia, this equipment had previously been purchased by the Federal government, and for other schools it was a prerequisite for participation.

In order to ensure that the results will be relevant to the teaching of basic skills, the participants have been selected from among elementary and secondary schools. This has excluded a number of colleges and universities that are also exploring this new technology. We feel that the principles and problems of courseware design are sufficiently different for children and adult students to warrant this distinction.

Finally, we have attempted to enhance the validity of the results by including schools across the country, with a variety of levels of socio-economic status. On the one hand, we have the inner city schools for which the Federal government has provided the equipment for this project; and at the other extreme, we have affluent and innovative schools that have already amassed extensive experience in using computers for instruction.

Because of the significant hurdles to be overcome in putting a new technology to use, the Federal government has taken a leadership role both by funding projects that produce videodiscs for school use, and, in this project, by providing support and incentives to schools to try the technology. We are implementing two broad categories of assistance: providing a medium by which schools can communicate with each other and exchange both programs and insights based on trying these programs out and by providing equipment backup and service. The equipment support extends to purchase of interface cards for schools that do not already have a means of controlling videodisc displays from their computers.



In order to foster communication, we have created a ViM Network, by means of which participants can send messages both to single recipients and to the other participants as a group. Four criteria guided selection of the particular network medium: (1) the medium should be capable of storing and transmitting programs as well as messages; (2) it should have a powerful text editor, so that it can be used to translate programs between dialects of the same language; (3) the cost should be minimal, and also transparent to the participating schools; and (4) the system should be easy to use.

In addition to providing the medium, the project is providing assistance in connecting to the network, including modems to allow microcomputers to act as terminals and, where necessary, telephone extension installation costs. We believe that with this assistance, the only investments required of the schools in order to access the network are (1) the cost of calls to the nearest Telenet node, (2) monthly telephone bills, and (3) time to learn how to use the network.

Equipment support has been a difficult decision, because without limits, the costs can skyrocket. We have restricted outright purchases of equipment to loan to schools to videodisc interface cards (and the previously mentioned modems), and the remainder of our support is in the form of backup equipment to be sent to schools while their equipment failures are remedied, and (within limits) replacement parts. The project staff have taken training courses in servicing the type of microcomputer being used in 90% of the network sites (Apple), and we are assisting some schools directly with equipment maintenance.

In spite of the limited nature of the equipment support, equipment costs comprise over one fifth of the direct expenses included in the contract awarded for coordinating the network and developing and implementing evaluations of courseware.

The goal of this effort is to find out what the potential of ViM technology is and how best to use it. In order to accomplish this purpose it is necessary to examine specific courseware, both in vitro and in vivo, to determine what works and what doesn't. To carry out this evaluation, we plan to apply three types of observation, and to identify different sources of strengths and weaknesses.

The three types of observation will be:

(1) Content validity, in which we examine the match between the courseware and previously accepted attributes of good courseware, such as appropriate content, appropriate pedagogical principles, clear instructions, informative record-keeping, and motivation enhances;

(2) Performance changes, in which we embed sufficiently detailed record-keeping within selected software to provide the basis for analysis of components of the learning process; and

(3) Classroom effectiveness, in which we gather teachers' observations of the strengths and weaknesses of the courseware in the context of of their classrooms.

These observations will be analysed to identify appropriate avenues for improving basic skill education, within and between the broad categories of (1) changing the characteristics of the videodisc medium, (2) changing the characteristics of the content of videodiscs; (3) changing the characteristics of software written to use videodisc material; and (4) changing the ways in which the use of given courseware is managed.

The results of these analyses will be made available immediately to members of the ViM network and, as quickly as feasible, to curriculum developers at large.

When establishing a network, one does not want to exclude any schools that are carrying out relevant activities and are interested in participating. On the other hand, there are costs associated with each additional participant. Attempts to be all-inclusive might lead to damaging dilution of the assistance the project can give to schools in implementing the new technology, thereby reducing the value of the test of the technology. Thus, given the resources available at the Federal level for this project, it was decided that 45 schools should be invited to participate.

When we began, we were not sure how many schools we would find that were prepared to try out videodisc-microcomputer technology. There might be so many that we would have to be highly selective, or there might be so few that we would need to actively recruit schools. We started with the previously selected Washington area schools and called various regions that have been known for their leadership in computer technology in the schools. At the same time we waited for calls from interested schools to the Division of Educational Technology. At present, we are just under our planned limit of 45; and although we have not had to turn away applicants yet, we shall have to in the near future. We have nearly 40 sites participating, from Oregon, California, Utah, North Dakota, Minnesota, Michigan, Indiana, Louisiana, Pennsylvania, New York, Maryland, Virginia, and the District of Columbia; and we hope shortly to add 5 more in different states.

One problem we have had to consider in selecting schools is the variety of hardware being used in the schools. The majority of schools we have been in contact with have Apple computers, and it is clearly more efficient to set up a network with uniform resources. However, we believed that this might inappropriately limit the test of the technology, and so we have included schools with other computers, specifically, Commodore and Tandy computers. We have not yet worked out all the dificulties implied by this decision, however. By implementing the network on a medium with a powerful text editor, we have, hopefully, made it possible to translate BASIC programs, at least, between computers made by different manufacturers.

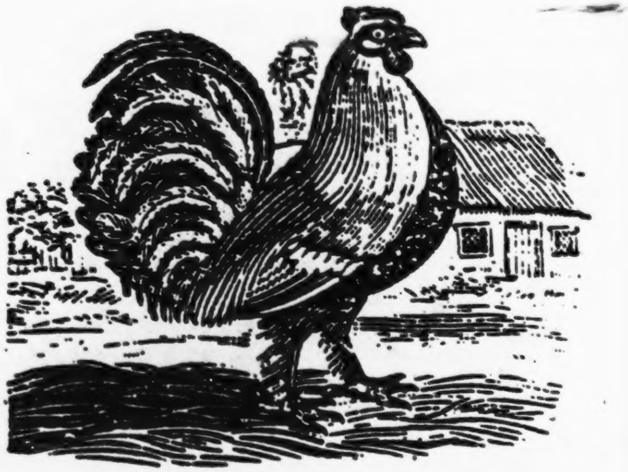
We do not view the network membership as static. It is possible that one or more schools will find itself unable to participate actively, so that the purposes of the project would be better served by replacement with another school. Also, if a school wishes to participate in such a way that no significant additional costs are associated with participation (i.e., the school is responsible for its own equipment and telephone costs), we would not plan to exclude this participation.

(End of Part I — Part II Next Month.)

California

1. California School for the Deaf-Horace Street, Riverside, California. This school has a microcomputer-videodisc interactive instructional system that trains the school's multi-handicapped and deaf students. The population of the institution ranges from 6 through 21.

2. Hesperia School District — Third Street, Hesperia, California 92345. A rural school district located on the edge of the Mohave Desert. There are only five schools in the entire school district which only serves grades K through 6. Five of the schools are located in and around the town of Hesperia, but one of the schools is located 23 miles away one with only 22 students. The school system uses videodisc players interfacing with a mainframe in the four schools in or near the city while the smaller school uses a TRS-80.



Connecticut

3. Eastern Junior High School — Hendrie Avenue, Riverside, Connecticut 06878. The schools serves abo 820 students, grades 7-9, in an upper-middle class community in southern Connecticut. Ten Apple computers, with disc drives and printers, have been introduced into the school as part of a district-wide program. The school uses a DVA-III videodisc player using discs supplied by the Network.

District of Columbia

4. Capitol Children's Museum — Third Street, N.E., Washington, D.C. 20001. The museum is located near Capitol Hill and annually attracts an estimated 250,000 visitors. It uses a DVA II and an Apple II microcomput as part of an exhibit on the history of human communication.

5. Petworth Elementary School — Sheperd Street, N.W., Washington, D.C. 20011. A mid-sized urban school with about 19 teachers. The school has an Appl II and a DVA-I videodisc player and a Color Novation interface. At this time this school is using the Infinity Factory Videodisc series.

6. Shadd Elementary School — East Capitol Street, S.E., Washington, D.C. 22019. An urban K-6 serving approximately 400 students and staffed by 23 teachers. This school uses the DET-produced videodiscs on a DVA-I videodisc player and an Apple II microcomputer

7. Simon Elementary School — Mississippi Avenue, S.E., Washington, D.C. 20032. An urban school of abo 600 students this school uses a DVA-II videodisc player with an Apple computer utilizing the DET videodiscs.

8. Syphax Elementary School — Half and N Streets, S.W., Washington, D.C. 20024. This school was one of the first participants in the ViM Project. Syphax, like most of the other participants from the District of Columbia, is using an Apple II and a DVA-I videodisc player combined with captioned television. This school using the National KIDISC, the Infinity Factory series, and the Music Is Series along with selected software programs for the microprocessor only.

9. Takoma Elementary School — Piney Branch Road and Dahlia Street, N.W., Washington, D.C. 20012. Information on this school's program was not available at this time.

10. Webb Elementary School — Mount Olivet Road, N.E., Washington, D.C. 22002. This small urban school of 584 students uses its ViM to train teachers as well as students. Using a Bell and Howell microprocessor and a DVA videodisc player the Webb school has encorporated eleven videodiscs into its curriculum. Some of the videodiscs used are: Infinity Factory, Music Is, New Dimensions in Communication, and the "Beltway Disc".

11. Winston Education Center — Erie Street, S.W., Washington, D.C. 20020. This school joined the ViM Project in April of 1982 to increase the awareness of computers for its students and to initiate the process of developing computer literacy. This school also uses an Apple II interfaced with a DVA-II videodisc player. Winston School uses the DET-produced discs, including the Infinity Factory, Music Is, and the KIDISC.

Florida

12. Cambridge Elementary School-Cambridge Drive, Cocoa, Florida 32922. Located near Cape Kennedy this school has an enrollment of about 560 students in what may be considered a rural district. This school has a videodisc player but does not have a microprocessor to operate it. At this time the school is limiting the use of the videodiscs player to the math and music departments while hoping that the State of Florida will fund the purchase of a microcomputer to work with the videodisc player.

13. P.K. Young Laboratory School Southwest 11th Street, Gainesville, Florida 32611. This school is a K-12 laboratory school that is part of the University of Florida's Department of Education. About 900 students attend this school which has been involved in the use of computers in education since 1969. Over the past two years P.K. Young School has participated in the development of interactive videodiscs materials in the areas of Areospace Education, Health Education, and New and Emerging Technology.

Illinois

14. Saint Paul Lutheran School — Superior Street, Melrose Park, Illinois 60160. This school of 270 students serves primary black and Hispanic children in an urban/suburban mixed area. The school uses an open nethodology in which the videodisc player and the nicroprocessor are moved from area to area on a cart. n addition to the DET-produced videodiscs, Saint Paul's uses the Viva Allegre videodisc and interactive program.

Indiana

5. Lafayette School Corporation — Cason Street, afayette, Indiana 47940. This is a school district of pproximately 7,900 students in 11 elementary schools, wo junior high schools, and one high school. The listrict has been using microcomputers since 1978 and t this time owns about 55 Apples. Through an ESEA Title IV(c) grant in 1981-1982, Lafayette is producing nteractive curriculum materials in economics for use on ll grade levels.

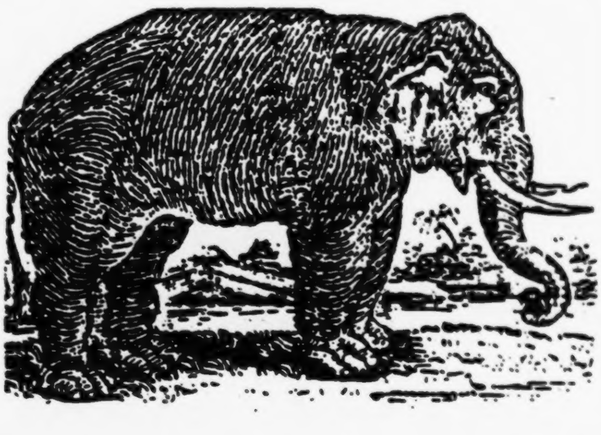
Louisiana

16. Saint Martin's School — Airline Highway, Matairie, Louisiana 70003. This is a K-12 private school of 1,000 students located in the suburbs of New Orleans. This school has received discs for utilization in the school's curriculum but at this time is in the process of finding the money for the videodisc player.

Maryland

17. Gustavus Brown Elementary School — University Drive, Waldorf, Maryland 20601. This school of 540 students is located about 25 miles southeast of Washington, D.C. in a region that is a mixture of suburban and rural areas. The school has an Apple II with a disk drive with a DVA-I videodisc player. The school has several discs for use in their system such as, the University of Nebraska Experimental Disc, the Music Is series, Video Versitility, Think It Through, Language and Learning in the Home, the Infinity Factory Series, Basic Tumbling Skills, KIDISC, and the ABC/NEA School Disc.

18. Rock Creek Forest Elementary School — Grubb Road, Chevy Chase, Maryland 20815. This school serves 320 students in an affluent suburb of Washington, D.C. As with many of the schools in the ViM Network, Rock Creek Forest is using an Apple with a DVA videodisc player. In addition to the DET-series this school is using an interactive videodisc program entitled "Punctuation" as well as several of the programs available from the ViM Network.



Michigan

19. Ann Arbor Public Schools — South State Road, Ann Arbor, Michigan 48106. This school district serves 15,000 students in 26 elementary schools, five intermediate schools, and three high schools. The videodisc system is now used primarily as a demonstration medium utilizing a Pioneer videodisc player and videodiscs produced by the National Geographic Society and those provided by the Network.

Minnesota

20. AERS Project — Littlefork, Minnesota 56653. This is a school-based organization that aides rural schools in the establishment of "learning centers" where students can direct their own instruction. Twelve operating centers have been established to date by the project. This project too has limited its use of the videodisc to demonstrations of it potential. The organization intends to work closely with the Minnesota Educational Computing Consortium in securing materials.

21. Edina Public Schools — Normandale Road, Edina, Minnesota 55424. This is an affluent district of 6,000 students with four elementary schools, two middle schools, and one high school. The one Pioneer videodisc player and the Apple that it interfaces with are kept in the district offices and are delivered to schools upon request. The district has several videodiscs in it posession. They are: "Julia Child: Quiche Lorraine and Company", "Master Cooking Course", the Art awareness collection from the National Gallery of Art, and "The King and I". In addition the district is scripting a disc for the Network.

22. Independent School District #100 — Wrenshall, Minnesota 55797. This single-site school rural district owns seven Atari 400's, four Apples, and one Pioneer videodisc player. In addition to a collection of DET discs the district is using the "Viva Allegre" disc.

23. Mid-State Educational Cooperative — N.E. Second Avenue, Little Falls, Minnesota 56345. This cooperative consists of five adjacent school districts with a total student population of about 7,000. The districts range in size from 600 to 4,000 K-12 students. The ViM unit is a Pioneer videodisc player, an Apple, and a printer. The cooperative is looking to purchase an economics curriculum videodisc from another ViM member to the DET series that it has in use.

24. Minneapolis Public Schools — N.E. Broadway, Minneapolis, Minnesota 55413. This is Minnesota's largest school district consisting of 45 elementary schools and 15 secondary schools. This district is strongly committed to the use of educational technology as demonstrated by the purchase of more than 500 Apple microcomputers. Presently the use of videodiscs is limited to teacher training using the sett supplied by the DET.

25. Minnesota Educational Computing Consortium — Broadway Drive, Saint Paul, Minnesota 55223. The Minnesota Educational Computing Consortium (MECC) was created by combining Minnesota's four major educational systems, the State Department of Education Community Colleges, State Universities, and the University of Minnesota. Since MECC is not a school itself its use of videodiscs have been limited to research and development of new educational technologies. The consortium received a grant in 1979 to begin the development of a course in economics using videodiscs and microcomputers. The first of the five planned units is now being pilot-tested at seven sites in Minnesota.

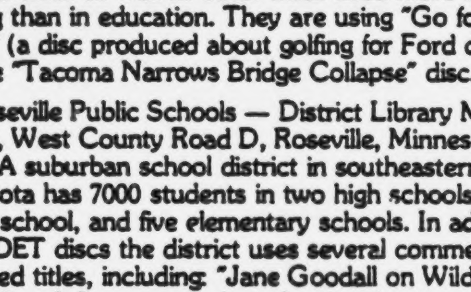
26. Mound West Tonka High School — Sunnyvale Road, Mound, Minnesota 55364. Located in the Minneapolis suburbs this school of 1000 students has 22 Apple computers and a Magnavox videodisc player. The player does not permit interactive training but has been used to show linear video programming to the students.

27. Osseo Public Schools — 93rd Avenue, N.W., Osseo Minnesota 55369. A suburban school district comprised of 15 elementary, three middle, and two senior high schools is one of a minority of public schools experiencing a rapid rise in enrollments. The district owns 100 Apple II computers and one Pioneer videodisc player. To date the district has been using the DET supplied discs as well as other discs used more in training than in education. They are using "Go for the Green" (a disc produced about golfing for Ford dealers) and the "Tacoma Narrows Bridge Collapse" disc.

28. Roseville Public Schools — District Library Materials Center, West County Road D, Roseville, Minnesota 55112. A suburban school district in southeastern Minnesota has 7000 students in two high schools, two middle school, and five elementary schools. In addition to the DET discs the district uses several commercially produced titles, including: "Jane Goodall on Wild Hyenas" and discs on tennis and swimming as well as several feature films available on disc.

29. Rothsay Public School — Box 247, Rothsay, Minnesota 56579. This single-site school district in the Red River Valley region is populated by 230 children of the farmers of the area. This district is using the DET produced series in their classes.

(More ViM Network Members in March)



Education

Part II

Facilitation of Use of ViM Technology

It was essential to prepare for the on-line mail system as early as possible, to provide a concrete reality to the project. With this electronic mail system, schools could identify a specific network "object." We therefore set up a system with which we are quite familiar, based on the Stanford University computer facility. This required a minimal initial investment, in either time or money, so if there proves to be a better alternative in the future, little will be lost in switching computers.

In fact, however, in addition to being competitive on the cost dimension, this alternative offered several advantages. First, there is the Wylbur text editor, which adds to the mail system the capacity to amend and alter programs and other data sets being stored and transmitted via the network. Second, it gives the project coordinators the capability of controlling the logon sequence so that a questionnaire, for example, can be administered at logon time. Third, by interfacing with Telenet and Tymnet, it gives us the capability of reversing telephone charges so that schools will not be charged. Finally, it gives us access to detailed records of system usage, while providing the capability for each user to maintain secure files on the system.

At present, we have put the first issue of a periodic newsletter on the Stanford system so that it can be retrieved by network members, and we have also stored a telephone directory of participating schools, a set of BASIC programs, and an Index of data sets available to users. Thus, we expect that by the end of this month, February, 1982, most members of the network will have used the on-line mail service at least once.

To connect to the network, or any other external system, each microcomputer must be equipped with a modem. So far we have focused on the Apple computers in the network and ensured that each has a Novation AppleCAT modem, which includes software for low and high speed memory transmission and switching to local disk access to store and retrieve transmitted information. One of our main problems at present is training the personnel at the participating schools how to use the modem and its associated software to communicate with the network.

Of course, with modems each of the schools can communicate with each other directly, without using the electronic mail system at Stanford, and thus without leaving a trace that can be used to record activity in the network. This provides us with a dilemma, because although the Stanford system can be made convincingly attractive, with its text editing, storage, and wide band broadcasting capabilities, it incurs telephone costs that could be avoided by users who are situated near each other and who call each other directly. Although the telephone costs are transparent to each school, they do in fact subtract from the total resources the project has for assisting the schools and evaluating the technology. Should we encourage schools to call each other directly (e.g., by writing instructions and software to facilitate it) or should we discourage it for the duration of this project?

In addition to the on-line mail system, the project will be assisting participating schools with some equipment needs. We've made some progress in that area, focusing on Apple computers, which are at the large majority of schools. The schools are really in three categories of about equal numbers:

(1) those with significant experience using both microcomputers and videodisc players in instruction, if not together;

(2) those with some experience with microcomputers in instruction who are taking the initiative to acquire videodisc players and otherwise become prepared to participate in the project; and

(3) the schools for which this project is the first real experience with the use of microcomputers in instruction.

The equipment needs of these categories of schools are different, but for each they fall into two types: equipment maintenance and videodisc interfacing.

The project staff have prepared to assist schools in maintenance of their microcomputers by becoming certified as technicians and by acquiring backup computers, spare parts, and diagnostic programs from the Apple computer company.

We have evaluated several alternatives for intefacing Apple computers with videodisc players, and we have found only one that is in a reasonable price range and which can flexibly serve the variety of videodisc players in use in the network. In trying this one with one of the major laser videodisc models (DVA 7820-1), we encountered a hardware problem with the player which was first diagnosed by the manufacturer as a bad card in the player. Later it was rediagnosed by the manufacturer as a design problem in the player that had been cured in later models of the player. This problem has not yet been completely bresolved.

Formative Evaluation

Two data collection forms had to be developed for the evaluation aspects of this project: a ViM Usage Log and a Teacher's Courseware Assessment form. We have developed these and obtained FEDAC and OMB clearance to use them.

The ViM Usage Log is a set of eight multiple choice questions that can be administered twice monthly as a part of the network sign on procedure. To implement this, we can set a flag so that the first time each participant signs on, he or she will be asked the questions. After that, the questions are skipped, until we reset the flag.

The ViM Usage Log gathers information on the level of usage of the videodisc and microcomputer equipment for basic skills instruction; on the context of its use (grade level and location); on problems; and on the overall assessment of the contribution of the technology.

The Teacher's Courseware Assessment is one of three methods of data collection for the courseware specific evaluations to be carried out. It consists of seven questions concerning the effectiveness of the courseware, six questions about specific problems that might occur in using the courseware and how they were dealt with, and eight short questions about the context in which the courseware was being used.

Priority one, then, is a further definition and continued fortification of the established market for I-V programming. The question is one of public acceptance, and the first great strides in this direction have occurred in the public information systems market sector. Last year in Knoxville, and right now at the EPCOT center in Orlando, Florida, ordinary people are discovering the enjoying I-V in a non-threatening environment that reinforces the modernity and desireability of automated programmed learning. Public information systems have merged as a major sector of the I-V disc market. This bodes well for the affiliated industires but does not address the other side of the issue, that goal of I-V as a training discipline.

For the clue as to how the workforce will be retrained, we must turn to the second priority, program variety. If the success of television over the past three decades is an indicator, then the public, once conditioned to I-V systems which, at their best build upon the public's acceptance of television, will create a demand for consumer-level I-V systems. Many manufacturers have already begun to prepare for this potentially large market sector.

The projected neormity of this sector can be described in terms of its' extremes; on the one hand we have the pleasure of anticipating the arival of an externally controlled, random access CED videodisc player from RCA, and on the other hand there are reports that diverse multinational corporations are prototyping cable-access, mainframe-based I-V transaction systems. Away from the extremes there is the VHD, the Thomson, adn other dormant videodisc formats. I say dormant because despite rumors to the contrary, these formats have not dissappeared, they are simply out-of-town, in limbo, so to speak. The return of these formats will depend largely upon our realization of the first priority. But yet, Warner Communications, with its vast holdings, extensive library of programs, network affiliations, giant database (AMEX), an dhardware subsidiary (Atari) is not in a position to give the users of I-V systems what they need to be truely creative. The users are immediately demanding what I have designated as the third priority, system versatility.

Manufacturers cannot deny that users of I-V systems will ultimately produce their own brands of programming,first been wooed by the benefits of I-V. In less than five years there has been an explosion of I-V authoring systems, all in the name of versatility. Peripherals have come to include not only the videodisc players and videocassette players/recorders, but multiple combinations of videoplayers in sync, graphic overlay generators, touchscreens, random access digital audio, guaranteed frame addressing, et. al. As these tools are developed they stimulate I-V production in the private sector, swelling the catalog of available programs and aideing the definition of the market as a whole. Independent, videotape-mastered productions, as success is confirmed and sales increase, will ultimately become available on videodisc, if only for the savings that accrue thereby in duplication and distribution. System versatility provides the essence of continuity which enables the market to expand without restriction, *the "Information Age of Free Enterprise."*

Despite breakthroughs made in the past by I-V producers in the governmental and industrial sectors, I predict that it will be the independent producers in the private sector who create the groundswell of enthusiasn for new, adventurous configurations of I-V hardware. It will be these same independent producers that initiate change, create innovations, and most importantly, take risks. Manufacturers, if they are going to remain competitive, will bear the cost of equipping these mavericks with the latest, most versitile, low-cost systems. As artists, scientists, and game designers become I-V designers their participation will hasten the maturation of the consumer market and revitalize those instructional sectors that are now top-heavy with trainers and educators who are largely traditionalists.

I see the interactive videodisc itself as a microcosm o the I-V market. A complex segmented phenomenon, each part may ultimately sustain a separate industry. Each segment of the whole generates its own odds for success. For this process to take place there must be a uninhibited exchange of information across established channels of communication. In addition, new channels must be created. Manufacturers ust listen to their customers, producers must listen to both. Then and only then will the I-V sector contribute to the health of the economy, the strength of the nation. (Mr. Rosen is former Field Instructor for Interactive Video, Video Utilization Services, Sony Corporation of America, Hollywood, California.) (For more information *Contact:* H. Jeffrey Rosen, Consultant for Interactive Video, 860 Marco Place, Los Angeles, California 90291 or call 213/823-6505.)

The most pressing need at this point is for courseware to evaluate. The Federal government has funded production of two series of videodiscs, Infinity Factory and Music Is, and other discs may result from current projects, but at present we can only evaluate a very few alternatives. Once we have found out what is wrong with these, we must wait for the next generation of videodiscs to find new areas for improving the use of the technology.

Similarly, it would be an oversimplification to apply the same evaluation procedure to all courseware, ranging from half-hour exercises to K-8 systems. Realizing this, we plan to evaluate courseware in terms of "sessions", which will become more clearly defined as the project proceeds. Each session can be construed to have three successive components, although one or more may actually be missing for any particular courseware module:

(1) Identify the student and either assess status or retrieve status from records; then select a starting point;

(2) Administer a sequence of "Display/Request" pairs and record responses (the sequence will usually depend on the responses made); and

(3) Score the session and update and report the student's status.

The items to be included in the "checklist" will be similar to those developed by the National Institute of Education and reported at this conference by Richard Otte.

- Are the dimensions included in the student records meaningful and appropriate?
- Do the responses called for require the skills to be learned?
- Is the sequencing of material pedagogically sound?
- Are the branches to handle incorrect responses pedagogically appropriate (do they deal with the problem indicated by the error)?
- Does the videodisc contain a sufficient coverage of alternative paths?
- Are the graphics pleasant but unobtrusive?
- Is the videodisc material used well?
- Is there variety in the material displayed?
- Are displays and response requests free from requirements that don't relate to the lesson's objective?
- Are instructions easy to understand and responses easy to make?
- And, of course, is the program foolproof?

While some of these questions are obvious, others, such as the quality of graphics and the presence of extraneous requirements are not. One important product of this project will be a validation and improvement of such rating dimensions, by comparison with actual performance gains and teacher reactions.

Process Evaluation

The classroom teacher, who can observe the whole student and evaluate how well the material taught by the ViM technology enhances development, must remain the ultimate source of information on the effectiveness of courseware. Nevertheless, we can learn much about the detail of what works and what doesn't by direct observation of the actual interactions of the student with the system. This is possible because the computer provides us the capability of exact measurement of response times and of recording actual responses made to the stimuli.

Our approach will be to identify particular behavioral objectives of the courseware that can be measured both at the beginning of the interaction and at the end. We will then categorize students into three classes: those who possessed the skill both before an dafter the session; those who acquired the skill during the session; and those who lacked the skill both before and after the session. By comparing the last two of these groups, we shall be able to isolate the source of problems for the courseware in dealing with the third group.

The first step in the comparison is to identify "subgoals". Did the group that failed to learn achieve these subgoals? If so, then further analysis of the relations between the components and the overall skill are necessary. On the other hand, if not, then we search for the reason the subgoal(s) were not achieved. To address this question, we must categorize responses as indicating or not indicating attentive participation. If the student was responding randomly, for example, we might not expect learning to occur. If the participation appears to have been attentive, on the other hand, then we must look for a problem in the instructional design (such as not requiring practice of the target skill).

If there was no attentive participation, we must separate complete non-participation, which should be counted as a non-test of the courseware, from participation that wanes as a function of either boredom or frustration, brought on by the courseware design.

Gathering data in this form on several dozen students in several schools will provide valuable insights into the range of applicability of particular courseware modules and into the design characteristics that are associated with different levels of applicability.

Courseware Evaluation Plans

The most useful product of this project will be improved knowledge about how to use ViM technology. The data provided by the participating schools will serve to validate hypotheses about what makes courseware effective in general, and it will provide guidance in the design of videodiscs. Throughout the study we shall try to separate results that indicate a need for improvement of the medium from results that indicate, on the one hand, need for improving the content of videodiscs, and on the other hand, the use of given videodiscs in the classroom. It is essential for this purpose that we not only examine the videodiscs in the lab (content validation) but also record student behavior when interacting with the courseware (process analysis) and teachers' observations of the impact of the courseware in their classrooms (impact evaluation). Our approach is to use all three of these techniques, on selected packages.

The gathering of information will be enhanced if more people become involved in the evaluations, so we plan not only to design the data collection efforts but also to prepare a diskette containing an "Evaluation Design Facilitator" which staff of the participating schools can use to design and carry out their own evaluations of courseware. We hope that the school staff will find this useful both in evaluating courseware prior to purchase and in evaluating courseware that they may develop in house.

The Evaluation Design Facilitator will contain three modes of evaluation:

(1) Questions that the evaluator should address while examining the courseware firsthand;

(2) Instructions for inserting a machine language subroutine that records student behavior into an existing courseware module; and

(3) A questionnaire to administer to teachers whose students use the courseware, with guidelines for interpreting the responses.

Content Validation

The most inexpensive form of evaluation (other than using somebody else's prior evaluation) is to try the courseware out yourself with a checklist of good points to be matched and bad points to be avoided. Of course there is a danger in using a checklist because you may be tempted merely to add up the plusses and minuses in order to arrive at an overall rating. A mere appropriate use of a checklist would relate each plus to an increase in the breadth of situations in which positive results would be obtained and each minus to a restriction of the range of expected positive results.

Impact Assessment

Finally, as mentioned above, we plan to gather teachers' assessments of courseware modules, using questionnaires containing come 21 items. These items will cover assessment of effectiveness, identification of specific problems, and a description of the context of the courseware usage.

The questions on effectiveness cover student motivation, instructional content, individual diagnosis and assessment, adaptive remediation, and record maintenance. The problems mentioned in the questionnaide classroom management, hardware and software failures, instructions and documentation, and bridging to other classroom content. One open-ended question is included in which the teacher is asked for any other problems not falling into our preconceived framework. The context questions cover grade level, location, numbers of students simultaneously using it, hours per student, and intended relation to other curriculum components.

It is our hope and expectation that the results of these different evaluation approaches will converage to give us an overall picture of each of the videodisc/microcomputer courseware modules that we select for anlaysis.

ViM Network Participants (Part 2) Next Month.

Events

April 4-8, 1983: "Technical Symposium East '83," Hyat Regency Crystal City Hotel, Arlington, Virginia. The International Society for Optical Engineering is sponsoring a technical conference on a variety of optica engineering topics. *Contact:* SPIE-The International Society for Optical Engineering, P.O. Box 10, Bellingham, Washington 98227 or call 206/676-3290. Telex 46-7053.

April 5-7, 1983: "Technology Opportunity Conference on Optical Storage Technology Management", Four Seasons Clift Hotel, San Francisco. Sponsored by *Optical Memory Newsletter Including Interactive Videodisks." Contact:* Technology Opportunity Conference, P.O. Box 14817, San Francisco, California 94114, or call 415/626-1133. (Repeated on April 26028 in New York at the Warwick Hotel.)

April 10-13, 1983: National Association of Broadcaster: Convention, Las Vegas. *Contact:* National Association of Broadcasters, 1771 N Street, N.W., Washington, D.C 20036 or call 202/293-3500.

April 12, 1983: The first European Videodisc Association Meeting, London, United Kingdom. Meetinc to discuss the Association's creation, planning for Association services, as well as preparation for future meetings/conferences. For further information *Contact:* Don Tombs, Director, European Videodisc Association, Videodisc Technology, Limited, Roguebrune House, South Park, South Godstone, Surrey RH9 8LE, United Kingdom or call 0342 85 2250.

April 13-15, 1983: "Audiographics/Video Graphics" Houston, Texas. This conference will focus on a numbe of developments in the use of audio in conjunction with graphics displays which represent new technologies in instruction, simulation, and job performance. *Contact:* The Society for Applied Learning Technology (SALT), 50 Culpeper Street, Warrenton, Virginia 22186, or call 703/347-0055.

April 26-28, 1983: "Technology Opportunity Conference on Optical Storage Management". Warwick Hotel, New York, New York. (See Information listed for the April 5-7 dates.)

April 28-30, 1983: "Ed. Com/Spring '83" Convention Center, Washington, D.C. National Computer Conference And Exposition for Educators at all Levels. *Contact:* Judco Computer Expos, Inc., 2629 North Scottsdale Road, Suite 201, Scotsdale, Arizona 85257, o call 800/528-2355.

May 2-4, 1983: "Managing in an Information-Competitive World Economy," Mayflower Hotel, Washington, D.C. The Second Annual Conference of Associated Information Managers with featured speaker: including Dr. Richard Beal, Special Assistant to the President and Director of the Office of Planning and Evaluation, the White House, Desmond Hudson, President, Northern Telecom, Inc., and Andrew Young, Mayor of Atlanta, Georgia. *Contact:* Associated Information managers, Suite 400, 316 Pennsylvania Avenue, S.E., Washington, D.C. 20003 or call 202/544-2892.

APPENDIX E

INSTRUCTIONS FOR VIM-SCRIPT

This program is a tool for writing and executing instructional modules that use an Apple and a videodisc player.

An instructional module is developed as a series of actions, or information transactions, between computer and learners. Four types of actions are defined:

1. (T) Present Text on the Apple monitor.
2. (V) Present Video from a videodisc player.
3. (R) Request a Response from the learner.
4. (E) Exit to another instructional module or action sequence.

Each action has six components: its type specification (Component #1) and five others. Actions are performed in sequential order, except that R and E actions allow jumps to different points in the sequence, depending on the learner's progress.

These instructions are best understood if you have a copy of VIM-SCRIPT to try out each of the commands as you read about it.

There are four sections to the instructions:

(1) descriptions of VIM-SCRIPT editing commands

(2) action specification rules

(3) a summary of action specifications

(4) a description of how to obtain VIM-SCRIPT.

Using VIM-SCRIPT

VIM-SCRIPT is an Applesoft program. To start it, type RUN VIM SCRIPT.

Upon entry, you will see a menu of possible commands.

```
L)OAD A FILE
S)AVE THE CURRENT FILE
M)ODIFY AN ACTION
I)NSERT AN ACTION
D)ELETE AN ACTION
G)O AHEAD AND TRY IT
A)DD NEW ACTIONS
P)RINT ACTION SPECS
Q)UIT
```

These commands facilitate writing scripts, or action sequences; the actual scripts are entered one-by-one after typing 'A' (for ADD). Detailed explanations of the action types are contained in the ACTION SPECIFICATIONS section (below).

When you ADD actions to a script, they are stored in the computer. In order to keep the script, and even to play it, you must SAVE it on a diskette. If you want to edit a script you have saved, you must first LOAD it back into the computer, but to GO ahead and play it, you do not need to load it. You can edit a script by INSERTing, DELETEing, or MODIFYING actions; and you can PRINT a script either on a printer or on the screen.

Each of the commands in the menu can be executed by pressing its first lette

L)OAD

You will be asked for a file name of a previously saved instructional sequence. That file will be loaded into the current editing file in the computer. If a current editing file already exists, you will be asked whether you want to clear first ('C') or to append ('A') the new file to the end of the current file.

S)AVE

You will be asked for a file name to save the current editing file onto diskette. Before saving, ViM-SCRIPT resolves all the label references it can and prints a warning about any that it cannot resolve.

In editing a script, you often change only a few actions. Although you must 'LOAD' the whole script to edit it, you can save time by writing back out only those actions that have changed (leaving the rest on the disk unchanged). When you SAVE a script, ViM-SCRIPT asks for the number of the FIRST action you want to save. If you want to write the whole script, just press RETURN. If you want to write just a few actions, enter the number of the first one and you will be asked for the number of the LAST action you want to write. Note: if you write just a few actions, all other actions remain unchanged on the disk.

ViM-SCRIPT allows scripts of up to 300 actions to be saved.

M)ODIFY

You will be asked for an action number--which action to modify. All the the components of the action (see the ACTION SPECIFICATIONS section) will be displayed, and you will be requested to press the space bar. Then, after pressing space bar, enter the number of the component you want to chang (1,...,8). When asked, enter the new value for the component. Enter component 0 (zero) to exit and return to the command menu.

I)NSERT

Enter the action number, before which you want to insert a new action. The editor will then prompt you for the components of this new action. Note that all later actions are renumbered, and branches are renumbered accordingly. For example, when you type 'I' '10' to insert an action before action #10, the old action #10 becomes action #11, and so forth, automatically.

D)ELETE

You can delete a range of actions with one command. First enter the number of the FIRST action to be deleted, then enter the number of the LAST action to be deleted. All actions between them will also be deleted. all later actions are renumbered, and branches are renumbered accordingly.

G)O AHEAD AND TRY IT

This allows you to try out an instructional sequence stored in a diskette. You will be asked for its name.

You will then be asked for a STARTING POINT. This is the action number at which you want to start the script. Press RETURN to play it all. Otherwise, you will be asked to specify an ENDING POINT. Specify any large number (e.g., 1111) if you want to play to the end of the script.

When, during a tryout, you are asked for a response, you can exit back to the editing system by pressing '/'. Otherwise, the tryout will return to the editing system after a normal exit from the instructional sequence. If you have a abnormal exit (e.g., END OF DATA), type RUN to reenter the editing system, and LOAD the file you are editing.

A)DD

This starts prompting for new actions to be input, beginning after the last action already in the current editing file.

See the section (below) on ACTION SPECIFICATIONS for details on composing a script, or sequence of actions.

P)RINT

This will print out actions you specify, either one at a time, on the screen or all at once on a printer. First, you will be asked whether you want the listing to be on a printer in slot #1 or on the screen. Press 'Y' for the printer or 'N' for the screen. Then, you will be asked for the number of the first action you wish to see and the last action you wish to see. Any large number can be entered for the last action.
If you choose to see the listing on the screen, actions will be listed one at a time, and VIM-SCRIPT will wait for you to press the space bar before proceeding to the next action.

Be sure that your printer is on before choosing to PRINT on the printer.

Q)UIT

This will remind you to SAVE and then exit to BASIC.

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ViM-SCRIPT is written in Applesoft BASIC and is undergoing improvement. you have questions, comments, suggestions, or requests concerning ViM-SCRIPT, please notify the ViM Project Director at AIR.

ACTION SPECIFICATIONS

When you use the ADD, INSERT, or MODIFY command, you will enter the script writing mode of ViM-SCRIPT. You will be prompted for each ACTION and all other components.

When you are ready to return to the command menu, respond to the request for TYPE OF ACTION? by pressing 'C'.

The program prompts you for each component of each action. If you do not understand a request, type a question mark (and in some cases press return).

There are six possible responses to the prompt for 'TYPE OF ACTION?'

T	for text specification
V	for video specification
R	for response specification
E	for exit specification
L	for a symbolic label specification
C	to return to the command menu.

These are described in the next sections.

The flow of control in the instructional modules is from one action to the next, except where R, V, and E actions specify branches.

Text Specifications

After typing 'T' in response to the prompt for 'Type of Action,' you will be asked for five pieces of information.

Prompt	Response
(Component #2:) SCREEN LINE NUMBER?	Type a number from 1 to 22, or just press return if you want 'the next line'
(Component #3:) COLUMN NUMBER?	Type a number from 1 to 39, or just press return if you want the text to be centered.
(Component #4:) PRESENTATION TIME?	Type the number of seconds to wait before proceeding to the next action. If the next action is a response request, you probably want to set this to zero. Subsequent texts will not erase the screen unless specified to. Note: A small delay is built-in for the execution of each action.

(Component #5:) PRESENTATION MODE?	Type the mode for this particular text: N=Normal HN=Erase Screen, then Normal I=Inverse HI=Erase Screen, then Inverse F=Flashing HF=Erase Screen, then Flashing
(Component #6:) TEXT?	Type the text to present. Limit yourself to 50 characters. Do not include carriage returns, or quotes within the text, and if you include a comma or colon, type quotes before and after the text.

Examples

Components

(1)	(2)	(3)	(4)	(5)	(6)
T	4	6	0	HN	Hello

would clear the screen and print 'Hello' starting in column 6 of line 4, then proceed immediately to the next action.

(1)	(2)	(3)	(4)	(5)	(6)
T	4	12	3	I	there!

would print 'there!' in Inverse mode, then wait 3 seconds before proceeding to the next action.

(1)	(2)	(3)	(4)	(5)	(6)
T	0	0	0	HN	

would clear the screen of all text.

This type of specification allows you to present a text and then go back and highlight words by flashing them in a subsequent action. There is no need to present text at the left margin or starting at the top, and you can write over part of the text on the screen while leaving the rest intact.

Video Specifications

After typing 'V' in response to the prompt for 'Type of Action,' you will be asked for five pieces of information.

If you use any 'V' actions in your sequence, the first 'V' action must
(1) specify the device type (DVA-1 or VP1000) and
(2) have 'I', for INIT, as the video command.
All other information in this particular action (e.g., frame numbers) is irrelevant.

Prompt	Response
(Component #2:) STARTING FRAME NUMBER?	Type a number from 1 to 54000. If you just press return, it is set to 1.
(Component #3:) ENDING FRAME NUMBER?	Type a number from 1 to 54000. If you just press return, it is set to 50000.
(Component #4:) INTERRUPTOR INDEX?	Type a number of an action (such as a response request) to initiate during

	the video presentation. If you just press return, no interruption will b allowed. As soon as the action specified here is completed, for example by the mak: of a response, the videodisc presentā is interrupted.
(Component #5:) DEVICE TYPE?	At present this only supports DVA-1 o VP1000. Type either one of these and press return. The default is the device type specified in the previous 'I' video command.
(Component #6:) VIDEO COMMAND?	Type one of the following and press return: I for initialize P for straight play A for audio only S for slow forward F for step forward on each keypress R for step reverse on each keypress X for a single still frame.

Examples
Components

(1)	(2)	(3)	(4)	(5)	(6)
V	300	9999	0	DVA-1	I

would initialize a DVA model 1 videodisc player. The frame numbers are not read.

Initializing a VP1000 player involves a 45-second delay. It is helpful to fill the screen with text to be read during this delay.

(1)	(2)	(3)	(4)	(5)	(6)
V	3000	4000	35	0	P

would play a videodisc from frames 3000 to 4000, assuming the type of player specified in a previous 'I' command. While playing the disc, the program simultaneously executes action #35. When action #35 is completed, the videodisc presentation is interrupted.

(1)	(2)	(3)	(4)	(5)	(6)
V	12000	12900	0	0	X

would display frame 12000 for the amount of time normally required to play 900 frames (30 seconds).

The execution program built to use these action specifications handles all of the 'WAITS' and 'FINDS' needed to implement the video actions.

Whenever you end a videodisc presentation, the text that was on the screen prior to the presentation will reappear momentarily. Therefore, it may be a good idea to clear the text screen before each videodisc presentation sequence.

Response Request Specifications

After typing 'R' in response to the prompt for 'Type of Action,' you will be asked for five pieces of information.

Prompt	Response
(Component#2:) RIGHT RESPONSE PATH?	Type the number of the action to be executed next if the response given matches one of the alternatives specified in Component #6 (below). If you enter a number greater than 1000, it will be treated as a 'symbolic address', to be filled in later, by typing 'L' for the 'type of action' (see below).
(Component #3:) WRONG RESPONSE PATH?	Type the number of the action to be executed next if the response does not match any alternative 'right response.'
(Component #4:) MAXIMUM RESPONSE TIME?	Type the maximum number of seconds to wait before assuming a wrong response.
(Component #5:) REPETITION LIMIT	Type the maximum number of chances to make the correct response. After this limit is reached, control will pass to the very next action, without waiting for a right or wrong response. This allows you to exit from wrong-response loops.
(Component #6:) RIGHT RESPONSE	Type in the right response. Enter alternative right responses separated by the # symbol; for example, high#top#tall.

Examples

Components

(1)	(2)	(3)	(4)	(5)	(6)
R	15	18	10	3	EAST#LEFT#3

would wait up to 10 seconds for a student's response, after which time it would assume a Wrong response. If the response is Right (i.e., either 'east' or 'left' or '3'), then control will pass to action #15; if Wrong, then to action #18. If 3 Wrong responses are made, then control will pass to the very next action; for example, if this is action #13, then control will pass to action #14.

R 1001 1002 10 400 Y

would transfer to the action Labeled ('L') as 1001 if the response 'Y' were given, or to the action Labeled ('L') as 1002 if some other response were given.

Exit Specifications

When you type 'E' in response to the request for 'Type of Action?' you wi be asked for one or two additional components. Which components you need depend on your choice of exit mode (Component #2).

Prompt	Response
(Component #2:) TYPE OF EXIT?	Type a number from 0 to 5. If you Type 0, your instructional sequence will 'RETURN' to whatever BASIC program called it. This is the the simplest exit. However, see Type 5 for its further use: If you type 1, 2, or 3, your instructional sequence will end by accessing a file on diskette to either RUN, BRUN, or EXEC it. If you type 4, the instructional sequence will transfer to a specified action number and continue. If you type 5, an instructional sequence will be executed as a 'subroutine,' at the end of which the sequence will continue with the next action following this one. The 'subroutine' must end with an EXIT of TYPE 0 (zero).
(Component #3:) ACTION NUMBER?	For exits of Type 4 and 5, enter the number of the action to be executed next. Otherwise, enter 0.
(Components #4 & #5 are not used)	A listing of the action will include meaningless numbers.
(Component #6:) FILE NAME?	For exits of Types 1, 2, and 3, enter the name of the file on diskette to be RUN, BRUN, or EXECed. Otherwise, press return.

Examples

Components

(1)	(2)	(3)	(6)
E	1	0	NEXT LESSON

would run the Applesoft program entitled NEXT LESSON.

E 4 1005 0

would transfer control ('jump') to the action whose symbolic address is 1005. (E type 4 is like the BASIC instruction GOTO.)

E 5 1005 0

would temporarily transfer control to ('call') the action whose symbolic address is 1005. When, in the sequence of actions following 1005, an 'E (type 0)' action is encountered, control is transferred back to the next action following this one. (E type 5 is like the BASIC instruction GOSUB.)

E 0 0 0

returns control to the calling program. This is a common way of ending a lesson. If an E (type 5) action has been executed, this returns control to the action following the most recent such action. (E type 0 is like the BASIC instruction RETURN.)

Label Specifications

You can assign a 'label' to any action, so that you can refer to that action in any other action without knowing its actual sequential position. For example, in specifying 'right' and 'wrong' response paths, you are not likely to know the exact placement of the actions to which control will be transferred. You can specify these as actions with numbers greater than 1000. Then, when you finally come to enter the action to which control is to be transferred (i.e., the right or wrong response path), do the following.

In response to the request 'TYPE OF ACTION?'

Press 'L' and then the label (i.e., the number greater than 1000) that points to this action.

VIM-SCRIPT will then repeat its request for 'TYPE OF ACTION?' and you can enter the action which is to have the given label.

When you use the 'S' command to SAVE the script, all labels are replaced by the actual sequence numbers.

Example
Components

Action#	(1)	(2)	(3)	(4)	(5)	(6)
4	T	10	0	3	HN	Type Y.
5	R	1001	1002	10	3	Y
6	L	1002				
6	T	8	0	5	HN	Try again.
7	E	4	4			
8	L	1001				
8	T	8	0	5	HI	Very Good!

Action #5 requests a response. If the response is wrong (not 'Y'), then control transfers to action #6 (originally Labeled 1002), which prints 'Try again.' and returns to action #4. If the response is correct, then control transfers to action #8 (originally Labeled 1001).

Summary Table

Component Number	Type of Action				
#1	'T'	'V'	'R'	'E'	'C'
	(Text)	(Video)	(Response)	(Exit)	(Commands)
#2	Line Number	Starting Frame Number	Right Response Path	Type 0=Return 1=RUN	L)OAD S)AVE M)ODIFY
#3	Column Number	Ending Frame Number	Wrong Response Path	2=BRUN 3=EXEC 4='go to'	I)NSERT D)ELETE G)O
#4	Presentation Time	Interruptor Index	Maximum Response Time	5='call sub-sequence'	A)DD
#5	Presentation Mode	Device Type	Repetition Limit	(#3) Transfer Action Number	P)RINT Q)UIT
#6	Text	Video Command (I,P,A,S,F,R,X)	Right Response	Exit File Name	

OBTAINING VIM SCRIPT

To obtain the VIM SCRIPT program from the network, perform the following steps.

1) Boot the ViM-Ware diskette and press 'V' to connect to the network.

2) Type <ESCape> N R to receive the text from the network, and when the program asks you for a text file name, type

VIM.SCRIPT#PROGRAM

After the transmission, you will be asked whether you want to save the text file. Respond by pressing 'Y'.

3) Type <ESCape> N L to LOGOFF from the network, and press 'Q' to exit from ViM-Ware.

4) Type EXEC VIM.SCRIPT#PROGRAM and wait while the text file

loads as a BASIC program. You will see a series of right brackets as the program loads. These will stop when the program is fully loaded.

5) Insert a new diskette in the drive and type

```
INIT VIM SCRIPT
```

or insert a used diskette in the drive and type

```
SAVE VIM SCRIPT
```

In the former case, when you boot that diskette, you will automatically be running VIM-SCRIPT.

APPENDIX F

EXAMPLE OF A VIM SCRIPT

ViMSTUDY I is a self-contained, interactive video course that utilizes a single videodisc (Infinity Factory,. Decimal Fractions, Side A). Written in ViM-SCRIPT, the course presents four lessons to the student: Word Power, Science Corner, Math Quiz, and Mr. Memory. Each lesson is designed to engage the student for approximately 10-20 minutes and features different applications of ViM-SCRIPT capabilities.

1. Word Power -- presents seven words (election, candidate, majority, government, referendum, leaflets, and community) and asks for the definitions of each one. The words introduced are spelled out phonetically, and the student who misses the correct response is provided with supportive video material and microcomputer text. The student is then asked to type the word and is reinforced for a correct copy.

2. Science Corner -- contains no questions but allows the student to learn about and watch the development of frogs from the egg to the adult stages. Review of topics including metamorphosis and cell division is permitted, and the student is allowed to review one or more topics as many times as are desired.

3. Math Quiz -- uses multiple-choice questions about fractions to branch students to new questions and graphics displays. The concept of "proof" is introduced and the student is presented with several correct answers to the question "Why is 2/3 greater tha 1/2?" From the answers selected, students are assisted in understanding why the response constitutes an acceptable proof.

4. Mr. Memory -- is for fun, but it may also serve to stimulate students to watch other video segments more closely. A cartoon-like video segment is presented quickly and several questions concerning color, direction, and position are asked. The student may review the video segments at will and may then attempt answers to the question.

The following figure shows the (file) structure of ViMSTUDY I. Subsequent pages review the contents of Science Corner in detail.

ViMSTUDY I

- ViMSTUDY-MASTER (3)
  - ViMSTUDY-INTRO (15)
  - ViMSTUDY-DISC (38)
  - ViMSTUDY-SELECT (24)
    - WORD POWER-MASTER (66)
      - WORD POWER 1 (45)
      - WORD POWER 2 (51)
      - WORD POWER 3 (82)
    - SCIENCE CORNER-MASTER (27)
      - SCIENCE CORNER 1 (42)
      - SCIENCE CORNER 2 (36)
      - SCIENCE CORNER 3 (50)
    - MATH QUIZ-MASTER (41)
      - MATH QUIZ 1 (20)
        - GRAPH (25)
      - MATH QUIZ 2 (42)
        - ELEPHANT (29)
        - DONUT (19)
      - MATH QUIZ 3 (38)
      - MATH QUIZ 4 (80)
      - MATH QUIZ 5 (94)
      - MATH QUIZ 6 (22)
    - MR. MEMORY-MASTER (10)
      - MR. MEMORY 1 (35)
        - TRUCK (7)
      - MR. MEMORY 2 (36)
        - SANDWICH (7)
      - MR. MEMORY 3 (35)
        - KARATE (7)

SCIENCE CORNER - MASTER

Action Type						
T	12	0	3	HN	SCIENCE CORNER: THE LIFE CYCLE OF FROGS	
T	5	0	1	HN	THERE ARE FIVE STAGES	
T	7	0	2	N	IN THE LIFE CYCLE OF A FROG:	
T	12	0	1	HN	1. EGG	
T	0	0	0	HN		
V	25620	25680	0		X	This still frame shows the shape and substance of one frog egg.
T	12	10	1	HN	2. ZYGOTE	
T	12	20	1	I	(ZI+	
T	12	24	2	N	GOAT)	
T	0	0	0	HN		
V	25730	25790	0		X	This still frame shows the egg after fertilization.
T	12	10	1	HN	3. EMBRYO	
T	12	20	1	I	(EM+	
T	12	24	1	N	BREE+	
T	12	29	2	N	O)	
T	0	0	0	HN		
V	28000	28060	0		X	This still frame shows the frog embryo in its protective membrane, or sac.
T	12	0	2	HN	4. TADPOLE	
T	0	0	0	HN		
V	29373	29433	0		X	This still frame shows one tadpole emerging from its embryo.
T	12	0	2	HN	5. ADULT FROG	
T	0	0	0	HN		
V	30425	30485	0		X	This still frame shows an adult frog breathing above water.

```
E   5        1        0        SCIENCE CORNER 1
E   5        1        0        SCIENCE CORNER 2
E   5        1        0        SCIENCE CORNER 3
E   0        0        0        0
```

SCIENCE CORNER 1

Action Type						
T	8	0	1	HN	FROGS GROW FROM ONE STAGE TO ANOTHER	
T	10	0	2	N	BY THE PROCESS OF METAMORPHOSIS	
T	12	10	1	N	(MET+	
T	15	12	1	N	UH+	
T	12	18	1	I	MOR+	
T	12	22	1	N	FUH+	
T	12	26	5	N	SUS).	
T	14	0	1	N	THE COMPLETE METAMORPHOSIS OF THE FROG	
T	16	0	2	N	INCLUDES ALL FIVE OF THESE STAGES.	
T	0	0	0	HN		
V	25620	25680	0	DVA-1	X	These still frames, which were shown and described previously, are shown again in this part of the program to review the cycles of complete metamorphosis—from egg to adult frog.
V	25730	25790	0	DVA-1	X	
V	28000	28060	0	DVA-1	X	
V	29373	29433	0	DVA-1	X	
V	30425	30485	0	DVA-1	X	
T	10	0	2	HN	FROG EGGS ARE LAID IN WATER.	
T	12	1	1	N	EACH EGG IS A SINGLE CELL	
T	12	27	1	N	(SAY	
T	12	32	1	N	SELL)	
T	14	0	2	N	PRODUCED BY THE FEMALE.	
T	8	0	1	HN	WHEN THIS CELL IS FERTILIZED	
T	10	14	1	I	(FUR+	
T	10	19	2	N	T'LIZED)	
T	12	0	1	N	BY A MALE SEX CELL, OR SPERM,	
T	14	0	5	N	IT BECOMES A ZYGOTE.	

T	12	0	2	HN	A ZYGOTE BEGINS AS A SINGLE CELL
T	0	0	0	HN	
V	25730	25790	0	DVA-1	X The still frame showing the egg after fertilization is repeated.
T	10	0	1	HN	AND GROWS BY THE PROCESS OF
T	12	0	2	N	CELL DIVISION.
T	0	0	0	HN	
V	25730	26800	0	DVA-1	P This motion sequence shows the zygote dividing into many cells.
T	8	0	1	HN	THE FILM IS SPEEDED UP BECAUSE,
T	10	0	1	N	IN NATURE, IT TAKES FIVE HOURS
T	12	0	1	N	FOR THE ZYGOTE TO DIVIDE FROM
T	14	0	2	N	ONE
T	0	0	0	HN	
V	25730	25790	0	DVA-1	X The still frame of the fertilized egg is repeated.
T	12	0	2	HN	INTO THE FIRST 16 CELLS!
T	0	0	0	HN	
V	26260	26320	0	DVA-1	X This still frame shows the zygote after its division into 16 cells.
E	0	0	0		SCIENCE CORNER 2

SCIENCE CORNER 2

Action Type						
T	10	0	1	HN	CELLS MAKE UP ALL LIVING THINGS,	
T	12	0	1	N	AND CELL DIVISION IS THE PROCESS	
T	14	0	2	N	BY WHICH LIVING THINGS GROW.	
T	10	0	1	HN	AS THE ZYGOTE GROWS INTO AN EMBRYO,	
T	12	0	2	N	GROUPS OF CELLS FORM TISSUES.	
T	14	0	2	N	SKIN AND BONE ARE TYPES OF TISSUES.	
T	10	0	1	HN	OTHER CELLS FORM A SAC, OR BUBBLE,	
T	12	0	2	N	TO PROTECT THE EMBRYO WHILE IT GROWS.	
T	0	0	0	HN		
V	26800	27100	0	DVA-1	P	This motion sequence follows development from a multi-celled zygote to an embryo inside its protective membrane.
T	8	0	1	HN	AS TISSUES ARE FORMED,	
T	10	0	2	N	SOME JOIN TOGETHER TO FORM ORGANS.	
T	12	0	1	N	THE HEART AND BRAIN ARE TWO ORGANS	
T	14	0	2	N	THE FROG EMBRYO DEVELOPS.	
T	0	0	0	HN		
V	27100	28150	0	DVA-1	P	This motion sequence shows the embryo developing recognizable features.
T	10	0	1	HN	WITH TISSUES AND ORGANS,	
T	12	0	1	N	THE EMBRYO BREAKS FREE OF ITS SAC	
T	14	0	2	N	TO LIVE AS A TADPOLE.	
T	0	0	0	HN		
V	28150	28525	0	DVA-1	P	This motion sequence dramatically shows the breaking of the protective sac.

T	10	0	1	HN	SKIN AND BONE PROTECT THE TADPOLE,	
T	12	0	1	N	AND ITS ORGANS WORK TOGETHER TO LET IT	
T	14	0	2	N	SWIM, EAT, AND GROW.	
T	0	0	0	HN		
V	29375	29550	0	DVA-1	P	This motion sequence shows many tadpoles of different sizes swimming and eating.
T	8	0	1	HN	TADPOLES SOON DEVELOP LEGS.	
T	10	0	2	N	BUT THEY DEPEND ON THEIR TAILS TO SWIM.	
T	12	0	1	N	AS TADPOLES CHANGE INTO FROGS,	
T	14	0	2	N	THEY KEEP THEIR TAILS UNTIL THE LAST.	
T	0	0	0	HN		
V	29550	30150	0	DVA-1	P	This motion sequence shows tadpoles growing larger, acquiring all characteristics of the adult frog while keeping their tails.
T	10	0	1	HN	WHEN IT LOSES ITS TAIL,	
T	12	0	1	N	THE ADULT FROG ALSO LOSES ITS GILLS	
T	14	0	2	N	AND DEVELOPS LUNGS.	
T	10	0	1	HN	AT THIS TIME, THE ADULT FROG	
T	12	0	2	N	BEGINS LIFE ON LAND.	
T	0	0	0	HN		
V	30200	30450	0	DVA-1	P	This motion sequence shows the adult frog scrambling to the water surface and partially emerging onto land.
T	10	0	1	HN	BECAUSE FROGS LIVE PART OF THEIR LIVES	
T	12	0	2	N	IN WATER	
T	0	0	0	HN		
V	29400	29550	0	DVA-1	P	This motion sequence shows tadpoles swimming about under water.

T	12	0	2	HN	AND ON LAND	
T	0	0	0	HN		
V	30300	30420	0	DVA-1	P	This sequence repeats the emergence of the adult frog onto land.
T	10	0	1	HN	THEY ARE CALLED AMPHIBIANS	
T	12	12	1	N	(AM+	
T	12	16	1	I	FIB+	
T	12	20	1	N	EE+	
T	12	23	5	N	UNZ).	
E	0	0	0		SCIENCE CORNER 3	

SCIENCE CORNER 3

Action Type						
T	4	0	1	HN	TO REVIEW THE LIFE OF THE FROG,	
T	6	0	1	N	TYPE 1, 2, OR 3.	
T	8	0	1	N	TYPE 4 IF YOU'RE TIRED OF FROGS.	
T	11	5	1	N	1. CELL DIVISION: EGG TO EMBRYO	
T	13	5	1	N	2. EMBRYO DEVELOPMENT	
T	15	5	1	N	3. METAMORPHOSIS: TADPOLE TO FROG	
T	17	5	1	N	4. TIME TO LEAVE SCIENCE CORNER	
R	14	9	60	0	1	
R	24	10	0	0	2	
R	37	11	0	0	3	
R	50	12	0	0	4	
T	12	0	1	HN	FEEL FREE TO REVIEW ANOTHER TOPIC!	
E	4	1	0			
T	10	0	1	HN	CELLS MAKE UP ALL LIVING THINGS,	
T	12	0	1	N	AND CELL DIVISION IS THE PROCESS	
T	14	0	2	N	BY WHICH LIVING THINGS GROW.	
T	8	0	1	HN	FROM ONE EGG CELL THAT IS FERTILIZED	
T	10	0	1	N	(THE ZYGOTE),	
T	12	0	1	N	THE FROG EMBRYO DEVELOPS	
T	14	0	2	N	INSIDE A PROTECTIVE SAC.	
T	0	0	0	HN		
V	25730	27100	0	DVA-1	P	This sequence repeats development from zygote to embryo.
E	4	12	0			
T	10	0	1	HN	AS THE EMBRYO GROWS INSIDE	
T	12	0	1	N	ITS PROTECTIVE SAC	
T	14	0	2	N	GROUPS OF CELLS FORM TISSUES.	
T	10	0	1	HN	AS TISSUES ARE FORMED,	
T	12	0	2	N	SOME JOIN TOGETHER TO FORM ORGANS.	
T	0	0	0	HN		

V	27100	28150	0	DVA-1	P	This sequence repeats growth of the embryo, showing development of recognizable physical characteristics of tadpoles.
T	10	0	1	HN	WITH TISSUES AND ORGANS,	
T	12	0	1	N	THE EMBRYO BREAKS OUT OF ITS SAC	
T	14	0	2	N	TO LIVE AS A TADPOLE.	
T	0	0	0	HN		
V	28150	28525	0	DVA-1	P	This sequence repeats the motion of the embryo eventually leading to rupture of the protective sac.
E	4	12	0			
T	10	0	1	HN	TADPOLES SOON DEVELOP LEGS,	
T	12	0	1	N	BUT THEY KEEP THEIR TAILS	
T	14	0	2	N	UNTIL THE LAST.	
T	0	0	0	HN		
V	29550	30150	0	DVA-1	P	This sequence repeats the development of tadpoles into froglike creatures with tails.
T	10	0	1	HN	WHEN IT LOSES ITS TAIL,	
T	12	0	1	N	THE ADULT FROG ALSO LOSES ITS GILLS	
T	14	0	2	N	AND DEVELOPS LUNGS.	
T	10	0	1	HN	AT THIS TIME, THE ADULT FROG.	
T	12	0	2	N	BEGINS LIFE ON LAND.	
T	0	0	0	HN		
V	30200	30450	0	DVA-1	P	This sequence repeats the emergence of the frog onto land from beneath the water.
E	4	12	0			
E	0	0	0			

Classroom Teacher's Courseware Assessment

Since a major purpose of the ViM project is to evaluate available software, project contact persons are being asked to administer and send in this questionnaire assessing interactive materials. This questionnaire is intended to record the experiences of students in ViM Network schools in using interactive videodisc. As this evaluation phase is an essential part of the ViM project, we are asking for 100% cooperation! Please follow the procedure outlined below:

1. Identify a teacher who can use interactive videodisc materials (courseware) in the context of his or her classroom activities.

2. Show that person the materials, and ask him or her to arrange to use the materials in a class, or with a smaller group of students.

3. Ask the teacher to fill out the questionnaire.

4. Return the questionnaire promptly to Don McLaughlin, AIR, P.O. Box 1113, Palo Alto, California 94302.

Classroom Teacher's Courseware Assessment

Title of Interactive Material
You Are Evaluating: ____

Material Type: ____ interactive videodisc (not computer-controlled)
____ interactive videodisc-microcomputer program
____ other (interactive only—please specify)

____

Publisher or Producer: ____

Your School, City, and State: ____

1. About how many of your students are in each of the following categories?

   ______ a. Each day eagerly await their turn with courseware.

   ______ b. Each day are happy to work with the courseware.

   ______ c. Willingly use the courseware, but only when told to.

   ______ d. Somewhat unwilling to use the courseware.

   ______ e. Very negative towards the courseware.

2. How effective was the courseware in meeting your teaching objectives?

   ______ a. Extremely: it is an excellent method for meeting the objectives for which I selected it.

   ______ b. It adequately meets the objectives for which I selected it.

   ______ c. The courseware only partially addressed important objectives.

   ______ d. The courseware failed to meet important objectives for a least half the students who used it.

   ______ e. The courseware was a total waste of time.

3. For each pair below, indicate by placing an X on the line how close the courseware was to each extreme.

Clear presentation						Confused presentation
Well-paced						Too fast( ) or slow( )
Balance between information and practice						Too much information ( ) or too little information content ( )

4. Was the content of the exercises appropriate to your grade level?

______ a. Yes.

______ b. No, it was too difficult.

______ c. No, it was too easy.

______ d. It was too hard for some, too easy for others.

5. Has the courseware provided information on student differences that is useful in the teaching process?

______ a. Yes, I have a much greater understanding of many of my students' problems.

______ b. Yes, I have a greater understanding of a few of my students' problems and confirmation of others.

______ c. The information provided is not very useful.

______ d. The information provided is useless.

______ e. The courseware does not provide any diagnostic information.

6. Did the courseware adapt well to the varying skills and knowledge of your students?

______ a. It was appropriate for all students in the class.

______ b. It was too hard ( ) or easy ( ) for a few students.

______ c. It was appropriate for only a narrow range of skills and knowledge.

7. To what extent has the courseware reduced your total record-keeping burden?

______ a. Dramatically, more than 50%.

______ b. Substantially, between 15% and 50%.

______ c. Noticeably, between 5% and 15%.

______ d. Slightly, between 1% and 5%.

______ e. It has not changed the burden.

______ f. It has increased the burden.

8. Did the courseware, when in successful operation, cause any problems in the classroom?

______ a. Yes, it frequently interrupted other activities.

______ b. Yes, but only at first or very infrequently.

______ c. It had no effect on other classroom activities.

______ d. It had some effect, but not disruptive.

______ e. It improved the classroom organization.

If there was a problem, did you find any solutions you would recommend to others? If so, please list.

____

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9. How frequently were courseware sessions postponed or cancelled, due to equipment or program failure?

______ a. More than half the times we attempted to use it.

______ b. Several times, but most of the time it worked.

______ c. Once or twice.

______ d. Never.

If there was a problem, did you find any solutions you would recommend to others? If so, please list.

____

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10. How long did you spend reading about the courseware before you or the student actually used it for instruction?

______ a. More than five hours.

______ b. Between one and five hours.

______ c. Between 20 and 60 minutes.

______ d. Less than 20 minutes.

If there was a problem, did you find any solutions you would recommend to others? If so, please list.

11. How clear and complete did you find the directions for using the courseware?

_____ a. Complicated, yet incomplete.

_____ b. Simple, but incomplete.

_____ c. Complete, but complicated.

_____ d. Simple, yet complete.

If incomplete, what was the most important omission?

12. How well did the courseware content relate to other instructional materials used in the classroom?

______ a. It included content that conflicted with other instructional materials.

______ b. It did not conflict but also did not reinforce other instruction well.

______ c. It provided some support for other instruction.

______ d. It was a very good support for other instructional activities in the class.

If there was a problem, did you find any solutions you would recommend to others? If so, please list.

13. Please list any other significant problems in using the courseware.

If there was a problem, did you find any solutions you would recommend to others? If so, please list.

____

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____

14. In what grade(s) were students using the courseware enrolled?

____

15. In what room did students use the courseware?

____

16. Were students using the courseware visually and auditorily separated from other students?

____

17. How many students use the courseware at the same time?

____

18. How many computer consoles are in the room in which the courseware was being used?

____

19. How many hours did the average student spend with the courseware?

____

20. Did the courseware supplement or replace other materials?

______ a. Supplement.

______ b. Replace.

21. Did you intend to use the couseware as a stand-alone unit or in conjunction with other instructional materials?

______ a. Stand-alone.

______ b. In conjunction with other materials.

APPENDIX H

Videodisc-Microcomputer Usage Log *

1. On how many days this week was the microcomputer in use with the videodisc player for instruction or for preparing instruction?

(A) 0 8 (C) 2 or 3 1
(B) 1 2 (D) 4 or more 5

2. How many hours during the week was the equipment used for these purposes?

(A) 0 to 1/2 8 (C) 2 to 10 2
(B) 1/2 to 2 2 (D) More than 10 4

3. How many different teachers had their classes use it?

(A) 0 10 (C) 2 1
(B) 1 1 (D) 3 or more 4

4. How many different students used it?

(A) 0 10 (C) 6 - 20 0
(B) 1-5 1 (D) More than 20 5

5. Where was the equipment located? (Indicate all that apply)

(A) One classroom 0 (C) Resource room 5
(B) More than one classroom 2 (D) Other 9

6. In what grades was the equipment being used for basic skills? (Indicate all that apply)

(A) None 10 (C) 4 - 6 4
(B) K - 3 1 (D) 7 - 12 2

7. Were there any problems with the equipment?

(A) Hardware: Microcomputer 2 (C) Courseware or Other 1
(B) Hardware: Videodisc Player 3 (D) None 10

8. What is your overall assessment of the contribution of the equipment to instruction during this week?

(A) Outstanding 4 (C) Marginal 1
(B) Substantial 2 (D) None, or negative 9

* Handwritten numbers indicate frequencies obtained from one on-line administration of the questionnaire.

AMERICAN INSTITUTES FOR RESEARCH
IN THE BEHAVIORAL SCIENCES
P.O. Box 1113, 1791 Arastradero Rd., Palo Alto, Ca. 94302 ● 415/493-3550

APPENDIX I

ViM-WARE GUIDE

This guide was developed by the
American Institutes for Research
for use by ViM Project schools.
The development of the guide was
supported by the Department of
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Written by Barbara Ueltschi
Thomas Jefferson School, Falls Church, Va.

and

Dan Felker
American Institutes for Research
Washington, D. C.

September 1982

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What Is the ViM-Ware Guide?

This booklet gives you instructions for using your microcomputer to communicate with other school systems and teachers who share a network with you. The network is the ViM network. The ability to link schools all over the nation by computer is a very recent development whose potential only now is being understood. You are among the very few educators to have access to such a technologically advanced resource.

These instructions are designed to get you started using your computer on the ViM network. The instructions teach you about and how to perform six ViM network operations:

1. How to read your mail on the ViM network.
2. How to find out what is on the network.
3. How to get a description of the network files.
4. How to get a particular network file to read.
5. What to do with a text file that you have saved on a disk.
6. How to mail a message on the network.

For each network operation, we give you two kinds of "instructions." One kind of instruction describes the operation in a very general manner in order to give you an overview of the operation and some notion of what the computer does for you when you press certain keys on the keyboard. The second kind of instruction gives you specific step-by-step instructions on what you do and what you will see when you do it.

You will only learn by doing. We encourage you to read the instructions for each operation and to perform the specific step-by-step procedures. Get a feel of the computer, the ViM network, and what you can do on the network with the computer. Some experience and practice now will give you a good start at becoming what teachers and educators must become--an up-to-date, computer literate educator who is preparing to function in the classroomm of tomorrow.

What Is the ViM Network?

The ViM network is a system of connecting the various schools involved with the inter-active videodisc technology for basic skills instruction through the use of telephone lines and microcomputers. Computer people refer to this means of communication as "electronic mail." The ViM network uses Telenet as its communication line. Telenet links each ViM school to the Stanford University Computer Center and, through it, to all the other schools to exchange ideas, send and receive messages, and share courseware.

The Stanford facility is referred to as "WYLBUR," which is the name given to the text editing system on the Stanford computer. This system handles communications links with outside users.

What Is ViM-Ware?

ViM-Ware is the software program that allows you to use the network system. Each member has a unique 3-character code and a password. Each member's microcomputer is connected to a telephone line by means of a "modem" called the Novation Apple CAT, or for short, "Apple Cat." The telephone line is used to call a local Telenet number which will in turn connect you to WYLBUR. By using the local number, the long distance telephone charges are paid for by the network. You can call WYLBUR directly (at 415-328-4000) but this is a long distance call to Stanford University (Palo Alto, California) and can be quite expensive.

How Does the Network Operate?

The network accepts text files from one computer and sends it to another. When you send a message using the network, the text file is stored in the Stanford computer. This is referred to as uploading a file.

When you call the network in order to receive a text file, it is called downloading a file. This means you read and/or save a text file at your own computer that had been stored at WYLBUR.

Helpful Hint: Several network operations ask if you want to "save" information retrieved from WYLBUR. It is a good idea to have a special blank initialized diskette for saving the information you want. You then can retrieve the information from this diskette whenever you want and without having to get on the network. This saves you both time and money.

What Is a Text File?

A Text File is a set of lines of text. This set of lines can be informational, such as a memo or a newsletter, or it can be the text of a program written in BASIC.

An information text file consists of messages of all kinds written in English. This kind of text file can be sent to the network and stored at WYLBUR, sent to another network school by using the network and WYLBUR, or retrieved from WYLBUR and sent to your own computer for you to use. An example of this kind of text file is shown below:

MEMO

  To: Mr. J. Williamson
From: Ms. Anita Shaw

I will be in town from 20-23 July for the annual school system meeting. If possible, I would like to meet with you during that time to discuss the chances of using the third grade reading videodisc that you developed. I can be reached at 225-4031. Please call. Thanks.

A program written in the BASIC language is another type of text file. This kind of text file also can be sent to and stored at WYLBUR, sent to another network school, or retrieved from the network to you microcomputer. An example of this type of text file is shown below:

```
10  FOR I = 1 TO 10
20  PRINT "THIS IS A READING LESSON"
30  NEXT I
40  END
```

The procedures for transmitting informational or BASIC program text files involve different specific procedures, but the general uploading and downloading principles are similar.

OPERATION #1: HOW TO READ YOUR MAIL ON THE ViM NETWORK

The network makes it possible for another member of the network to send you a message. The network stores your message until you decide you want to read your "mail." You can read your mail anytime that you "log-on" to the network. To find out if you have any mail simple do the following:

1) boot the ViM-Ware disk

2) when the "menu" of commands appears, press the V key.

When you do this you are loggin-on to the network. Pressing the V key causes the comuter automatically to perform a whole series of operations:

-- it dials Telenet

-- it signs on to Telenet

-- it sets half duplex to avoid double printing

-- it instructs Telenet to connect to WYLBUR

-- it enters your special computer terminal number, user ID, group name, keyword, etc.

Then, if somebody has sent you electronic mail, the message will be listed. You will be asked the question DELETE? after the message is listed. If you can read the message right away and you do not want it to be saved on the network, answer YES (or Y). The message will not appear the next time you log-on. In other words, you "picked up" your mail. If you answer NO (or N) to the DELETE question, the message will appear each time you log-on until you decide to delete it from the network.

OPERATION #1: HOW TO READ YOUR MAIL ON THE ViM NETWORK

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Boot the ViM-Ware disk	*Menu of Commands* NEXT?	
Press the V *key*	79 DIALING: 9 429 7976	ON-LINE *appears at b* *of screen*
	DIALING COMPLETED	CARRIER *appears at b* *of screen*
	- TERMINAL MODE -	*You are connected to network.*
	(Several things roll by) - - - -	*The computer is being automatically logged to the network.*
	(A message may appear at this time)	
	DELETE?	
Type YES *or* NO *Press Return*	*********************************** VIDEODISC-MICROCOMPUTER NETWORK *********************************** COMMAND>	*If you answer* NO *to the* DELETE?, *your message will appear the next time you log on.*
Press ESC *key*	NEXT?	
Press the N *key*	Network <T> TRANSMIT TO NETWORK <R> RECEIVE FROM NETWORK <S> SHOW DATA SETS ON NETWORK <L> LOG OFF NETWORK <ESC> ESCAPE CHOICE:	
Press the L *key*	LOG OFF CLEAR NEXT? 166	*You are now disconnected from the network; no telephone costs are being incurr*

OPERATION #2: HOW TO FIND OUT WHAT IS ON THE NETWORK

You can read a variety of things from the network. These include newsletters, the names and addresses of the schools participating in the network, a list of computer and educational technology journals, special instructions for operating the computer, etc. All of these things are stored as text files. You can find out the names of the different files that are stored on the network much like you do when you scan a table of contents to find out what's in a book. To do this, you:

1) boot the Vim-Ware disk

2) when the "menu of commands" appears, press the V key.

3) after you are logged on the network and see COMMAND>, press the ESC key (no RETURN)

4) press the N key (no RETURN)

5) press the S key (no RETURN).

Having pressed these keys, you have given WYLBUR at Stanford University the command: SHOW DSN LIKE &AIR. This command simply tells WYLBUR to display all the files on the network that are associated with the ViM Project. A listing of the network files will then appear and roll by on the screen.

OPERATION #2: HOW TO FIND OUT WHAT IS ON THE NETWORK

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Boot the ViM-Ware disk	*Menu of Commands* NEXT?	
Press the V *key*	89 DIALING: 9 429 7976 DIALING COMPLETED - TERMINAL MODE - *(Several things roll by)* - - - - *(A message may appear at this time)* DELETE?_	ON-LINE *appears at b* *of screen* CARRIER *appears at b* *of screen* *You are connected to network.* *The computer is being automatically logged to the network.*
Type YES *or* NO *Press Return*	******************************** VIDEODISC-MICROCOMPUTER NETWORK ******************************** COMMAND>	*If you answer* NO *to the* DELETE?, *your message will appear the next time you log on.*
Press ESC *key*	NEXT?	
Press the N *key*	Network <T> TRANSMIT TO NETWORK <R> RECEIVE FROM NETWORK <S> SHOW DATA SETS ON NETWORK <L> LOG OFF NETWORK <ESC> ESCAPE CHOICE:	
Press the S *key*	- TERMINAL MODE - SHOW DSN LIKE &AIR *(Listing of file names will roll by on the screen)*	*Note the names of any files you might like to see.*

OPERATION #2: HOW TO FIND OUT WHAT IS ON THE NETWORK (cont'd.)

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Press the ESC *key*	NEXT?	
Press the N *key*	Network <T> TRANSMIT TO NETWORK <R> RECEIVE FROM NETWORK <S> SHOW DATA SETS ON NETWORK <L> LOG OFF NETWORK <ESC> ESCAPE CHOICE:	
Press the L *key*	LOG OFF CLEAR NEXT?	

OPERATION #3 : HOW TO GET A DESCRIPTION OF THE NETWORK FILES

Operation #2 will give you the titles of network text files. It doesn't describe what they are. To get a brief description of each network file, do the following:

1) boot the ViM-Ware disk

2) when the "menu of commands" appears, press the V key.

3) after you are logged-on to the network and see COMMAND>, press the ESC key

4) press the N key (no RETURN)

5) press the R key (no RETURN)

6) when you are asked for a file name, type &AIR.INDEX.

At this point, a brief description of each file will be given and will roll by on the screen. What essentially happens during this operation is that your computer asks WYLBUR to take the text file called &AIR.INDEX out of the ViM project's storage on a master disk at Stanford, and to put it into a temporary workspace that is assigned to you. This allows you to retrieve the file and read it at your computer. In computerese, this process is called downloading.

When this is finished, you will be asked if you wish to SAVE? this information. If not, type N (for NO). If so, insert an initialized disk and type Y (for YES).

OPERATION #3: HOW TO GET A DESCRIPTION OF THE NETWORK FILES

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Boot the ViM-Ware disk	*Menu of Commands* NEXT?	
Press the V *key*	89 DIALING: 9 429 7976	ON-LINE *appears at bottom of screen*
	DIALING COMPLETED	CARRIER *appears at bottom of screen*
	- TERMINAL MODE -	*You are connected to the network.*
	(Several things roll by) - - - -	*The computer is being automatically logged on to the network.*
	(A message may appear at this time)	
	DELETE?	
Type YES *or* NO *Press Return*	*********************************** VIDEODISC-MICROCOMPUTER NETWORK *********************************** COMMAND>	*If you answer* NO *to the* DELETE?, *your message will appear the next time you log on.*
Press ESC *key*	NEXT?	
Press the N *key*	Network <T> TRANSMIT TO NETWORK <R> RECEIVE FROM NETWORK <S> SHOW DATA SETS ON NETWORK <L> LOG OFF NETWORK <ESC> ESCAPE CHOICE:	
Press the R *key*	FILE NAME:	

OPERATION #3: HOW TO GET A DESCRIPTION OF THE NETWORK FILES (cont'd.)

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Type &AIR.INDEX	*(File names and brief descriptions roll by.)* SAVE (Y/N)	*Insert initialized disk if you are going to type* YES.

If You	You See
Type NO	COMMAND>
Press ESC	NEXT?
Press N	CHOICE:
Press L	LOG OFF NEXT?

If You	You see
Type YES	Catalog of files listed COMMAND>
Press ESC	NEXT?
Press N	CHOICE:
Press L	LOG OFF NEXT?

OPERATION #4: HOW TO GET A PARTICULAR NETWORK FILE TO READ

Operations #2 and #3 respectively give you a list of the titles of the network files and brief descriptions of these files. If you want to retrieve a particular file to read at your computer, then you perform this operation. Be sure you know the exact name of the file you wish to see. You do the following:

1) boot the ViM-Ware disk

2) when the "menu of commands" appears, press the V key

3) after you are logged on to the network and see COMMAND>, press the ESC key

4) press the N key (no RETURN)

5) press the R key (no RETURN)

At this point you will be asked for a FILE NAME:

You will type the name of the file you wish to see, exactly as it appears in the data set. For example:

```
&AIR.NEWS.LETTER#V8
&AIR.JOURNALS
&AIR.MEETINGS
```

Be sure to include the "&" and "." in the file name.

The file will then appear on your screen line by line. When this process is complete, you will be asked if you wish to SAVE? this file. If not, type N (for NO). If so, insert an initialized disk and type Y (for YES).

What essentially happens during this operation is that the particular file you want to look at is downloaded from WYLBUR's master disk at Stanford placed into your temporary workspace where you can retrieve it to you computer.

Any time you wish to interrupt transmission from the network (e.g., you may decide you have read enough of the file being listed on your screen), press the CTRL, SHIFT, and N keys simultaneously. It may take awhile for the Stanford computer to recognize you signal, but eventually will interrupt. You will see COMMAND> as the transmission halts.

OPERATION #4: HOW TO GET A PARTICULAR NETWORK FILE TO READ

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Boot the ViM-Ware disk	*Menu of Commands* NEXT?	
Press the V *key*	89 DIALING: 9 429 79-76 DIALING COMPLETED - TERMINAL MODE - *(Several things roll by)* - - - - *(A message may appear at this time)* DELETE?	ON-LINE *appears at bc of screen* CARRIER *appears at bc of screen* *You are connected to network.* *The computer is being automatically logged to the network.*
Type YES *or* NO *Press Return*	********************************* VIDEODISC-MICROCOMPUTER NETWORK ********************************* COMMAND>	*If you answer* NO *to the* DELETE?, *your message will appear the next time you log on.*
Press ESC *key*	NEXT?	
Press the N *key*	Network <T> TRANSMIT TO NETWORK <R> RECEIVE FROM NETWORK <S> SHOW DATA SETS ON NETWORK <L> LOG OFF NETWORK <ESC> ESCAPE CHOICE:	
Press the R *key*	FILE NAME:	

PERATION #4: HOW TO GET A PARTICULAR NETWORK FILE TO READ (cont'd.)

WHAT YOU DO	WHAT YOU SEE	COMMENTS
ype &AIR.*(followed by the ile name)*	*(File names and brief descriptions roll by.)* SAVE (Y/N)	*Insert initialized disk if you are going to type* YES.

If You	You See
Type NO	COMMAND>
Press ESC	NEXT?
Press N	CHOICE:
Press L	LOG OFF NEXT?

If You	You see
Type YES	Catalog of files listed COMMAND>
Press ESC	NEXT?
Press N	CHOICE:
Press L	LOG OFF NEXT?

OPERATION #5: WHAT TO DO WTH A TEXT FILE THAT YOU HAVE SAVED ON A DISK

Once you have a file saved on your disk from Operations #3 or #4, you will want to work with it. If the file is informational, such as a memo or a newsletter, you want to "list" it on your screen. This means that the program will appear on your screen, line by line, so you can read it.

There is a program on the ViM-Ware disk named W. The purpose of this program is to list out text files. To use this program, do the following:

1) press the Q key to exit from ViM-Ware.

2) type RUN W

3) insert the disk containing the text file you want to list

4) type USE followed by the file name (the preceding £ is replaced by a V)

5) type LIST ALL UNN if you want to see the whole file, or

6) type LIST 11/20 if you want to see lines 11 through 20, etc.

7) type LIST ALL if you want to see the line numbers actually listed.

What To Do if the Text File Is a Basic or Binary Program

TEXT-to-BASIC Conversion. If the text file is that of a program written in BASIC, type EXEC followed by the name of the text file. This will load the program line-by-line, emitting a "]" for each line (and possible a "SYNTAX ERROR" message at the end).

When the "]"s stop printing, the program is loaded in your microcomputer's memory. You can either SAVE it by typing SAVE followed by a name other than the original text file name, or you can start the program by typing RUN.

Text-to-BINARY Conversion. If the text file is that of a binary program, you can translate it back to a binary program by typing:

```
EXEC TEXTBIN
RUN
```

Give the name of the text file when asked.

The TEXTBIN program will BSAVE the binary program with the same name. However, BIN. will precede the name of the program.

OPERATION #6: HOW TO MAIL A MESSAGE ON THE NETWORK

If you want to communicate with another network member, you can send a message over the network. To send a memo, you must first compose a text file of that memo and save it. This is done before you log on to the network. The following steps are involved in composing a text file and saving it:

1) boot the ViM-Ware disk

2) when the "menu of commands" appears, press the K key (for KEYBOARD)

3) type your message, including RETURNs at the end of each line

4) when you have finished typing your message, press the ESC key

5) press the S key, followed by the T key (to SAVE a TEXT file)

6) when requested, type in a name for the text file and press RETURN. Do not have more than 8 characters between spaces in the file name.

Once you have composed and saved the text file, you send your message to the network by doing the following:

1) press the V key

2) after you are logged on to the network, press the ESC key, followed by the N key, followed by the T key (no RETURN)

3) you will be shown a CATALOG of files and asked the NAME OF TEXT FILE

4) type the name of the text file you want to send and press RETURN

5) you will be told to hit any key to continue, and you will see you message

6) type MAIL TO followed by the I.D. number of the network member to whom you wish to send your message (e.g., S20, S15, AIR, DET).

7) log off the network by pressing the ESC key, followed by the N key followed by the L key.

OPERATION #6: HOW TO MAIL A MESSAGE ON THE NETWORK

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Boot the ViM-Ware disk	*Menu of Commands* NEXT?	
Press the K *key*	Blank screen	*You are not logged on the network at this t*
Type your message line by line including RETURNs	Message typed on screen	
When finished, press the ESC *key*	NEXT?	
Press the S *key*	SAVE MEMORY TO FILE <T> TEXT FILE <B> BINARY FILE <ESC> ABORT SAVE CHOICE:	TEXT FILE *is saved on disk*
Press the T *key*	CATALOG *of files* NAME OF TEXT FILE?	
Type in name of file *Press the* Return *key*	NEXT?	*Use no more than 8 characters between spaces. No punctuation*
Press the V *key*	DIALING: 9 429 79~~76~~ 39	ON-LINE *appears at bot of screen*
	DIALING COMPLETED	CARRIER *appears at bot of screen*
	- TERMINAL MODE -	*You are connected to th network.*
	(Several things roll by) - - - -	*The computer is being automatically logged on to the network.*
	(A message may appear at this time)	

OPERATION #6: HOW TO MAIL A MESSAGE ON THE NETWORK (cont'd.)

WHAT YOU DO	WHAT YOU SEE	COMMENTS
Type YES *or* NO *Press Return*	*********************************** VIDEODISC-MICROCOMPUTER NETWORK *********************************** COMMAND>	*If you answer* NO *to the* DELETE?, *your message will appear the next time you log on.*
Press ESC *key*	NEXT?	
Press the N *key*	Network <T> TRANSMIT TO NETWORK <R> RECEIVE FROM NETWORK <S> SHOW DATA SETS ON NETWORK <L> LOG OFF NETWORK <ESC> ESCAPE CHOICE:	
Press the T *key*	CATALOG *of files* NAME OF TEXT FILE:	
Type name of Text File *press* Return *key*	*(disk will spin)* END OF DATA HIT ANY KEY TO CONTINUE	
Press any key	*Your message will be printed out line by line* COMMAND>	At this time, it is being sent to WYLBUR.
Type MAIL TO *followed by the* I.D. *number of the network member*	MAIL SENT TO (USER ID) COMMAND>	*Exceptions:* MAIL TO AIR MAIL TO DET
Press the ESC *key*	NEXT?	
Press the N *key*	*(list of Network Options)*	
Press the L *key*	LOG OFF CLEAR NEXT?	*You are now disconnected from the network; no telephone costs are being incurred.*